TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU

A THESIS SUBMITTED TO

BABA FARID UNIVERSITY OF HEALTH SCIENCES, FARIDKOT (PUNJAB)

IN THE PARTIAL FULFILLMENT

FOR THE AWARD OF DEGREE OF

DOCTOR OF MEDICINE

IN

PEDIATRICS

MAY 2022

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Dedicated

to

my Family

&

My friend

Dr. Sachin Preet

ACKNOWLEDGEMENT

This thesis not only represents my work at the keyboard, it is a milestone in my work of 3 years at this institute. I am highly grateful to the Almighty who gave me this opportunity to thank all those who have helped in successful completion of this work.

With a deep sense of gratitude, I am indebted to esteemed teacher and supervisor Dr. Puneet A. Pooni, Professor & Head , Department of Pediatrics, DMCH Ludhiana for being so supportive throughout. Her indelible help and fervent interest, with her academic excellence, commitment and readiness gives me great pride in expressing my gratitude towards her.

I wish to convey my heartiest thanks to Dr. Siddharth Bhargava, Associate Professor, for being the most helpful support and due to his able mature guidance and ever willing help, made assigned task simpler.

My sincere regards to Dr Deepak Bhat, Professor, for motivating and pushing me in academics to do the best and Dr JS Goraya, Professor, for being a great example and being an inspiration due to his equanimity and support throughout the course.

I would like to thank Dr GS Dhooria and Dr Kamaldeep Arora for their constant encouragement and motivation.

I would like to thank Dr. Shruti Kakkar for her constant push and being a source of inspiration and motivator at all times.

I would like to extend my gratitude to Dr Karambir S. Gill, for being available to bear the brunt of our frustration and supporting us and always wishing for our best.

This thesis would not have been possible without the able guidance of Ms. Ritu Sudhakar, Chief Dietician and Nutrition Specialist, whose constant efforts and inputs at all stages have helped me complete this piece of work. Special thanks to Dr Bhavna for her constant hard work, confidence and encouragement. It is only her patience and guidance that guided me through this period.

In my daily work, I have been blessed to have friends like Dr Kshish Aggarwal, Dr Rajneesh Bains, Dr Nikita Beri, Dr Vishal, Dr Gourav, Dr Pratibha & Dr Navneet, Dr Prateet, Dr Navita who stood by me through thick and thin and helped me bear rages against the world with equanimity, like family and whose companionship made me sail through this arduous journey smoothly.

I wish to thank all my seniors who have been constantly motivating, inspiring, sending heartiest wishes and praying for my prosperity always-Dr Sumati Verma, Dr Gagan, Dr Raina, Dr Nancy, Dr Ajit Inder, Dr Sanjana, Dr Komal, Dr Gurpreet, Dr Niraj, Dr Akashdeep, Dr Jasjeet, Dr Taniya, Dr Ritu, Dr Gursavreen, Dr Mehak, Dr Amita, Dr Alka, Dr Anupreet, Dr Siyaram, Dr Suryanshu, Dr Shehzad.

Special thanks to my colleagues –Dr Harpreet Kaur, Dr Savita, Dr Tanvi, Dr Navotam and Dr Disha for stimulations and fun we had together as part of Code Help!

Special mention goes to my juniors Dr Amneet, Dr Harpreet Singh, Dr Himani, Dr Navneet, Dr Rashmi, Dr Mitali and Dr Shubham; working with them was a pleasure and a blessing too.

I can never forget the timely reminders and wishful messages of Pushpa ji, who has supported us all immensely throughout this journey.

Words shall be woefully inadequate to express for unfailing attention, love and blessings by my mother Mrs. Dolly Somani, my father Mr. Pardeep Kumar and my sister Dr Priya Somani who have made me whatever I am today.

I would like to extend my sincere gratitude to Mr. Naveen Bhatia, Research and development center, for all his patience and guidance from the very beginning. I would like to thank Mrs. Namita Bansal & Mrs. Sonika Gupta for the immense help.

I wish to extend warm regards to the staff and patients for their cooperation. At last, I would like to thank all those who helped me to accomplish this task.

Dr. Nikhar Somani

LIST OF ABBREVIATIONS

PICU	Pediatric Intensive Care Unit
LOS	Length of Stay
CHDs	Congenital Heart defects
NSDs	Nutritional support days
EN	Enteral Nutrition
EEN	Early Enteral Nutrition
TPN	Total Parenteral Nutrition
HCW	Health care worker
DMC	Dayanand Medical College and Hospital
NG	Nasogastric
OG	Orogastric
AKI	Acute Kidney Injury
BMI	Body Mass Index
PRISM	Pediatric Risk of Mortality Scoring System
PSI	Physiological Stability Index
PIM	Pediatric Index of Mortality
DAMA	Discharged Against Medical Advice
CRRT	Continuous Renal Replacement Therapy
IEM	Inborn Error Of Metabolism
IAP	Indian Academy of Pediatrics
BMR	Basal Metabolic Rate
ASPEN	American Society for Parenteral and Enteral Nutrition
NPPV	Noninvasive positive-pressure ventilation

ABSTRACT

Introduction: Nutrition is required for the normal growth and development. Critical ill children have high risk of malnutrition due to stress induced increased BMR and protein catabolism. The delay in initiating and proceeding enteral nutrition can result in non fulfillment of target energy and protein delivery goals. Advantages of enteral nutrition include maintaining the integrity of mucosa of intestine, preventing translocation of bacteria, further decreasing infection rate, improving the status of immunity, thus decreasing morbidity and mortality.

Aim of Study: 1) To study the current practice of using Enteral Nutrition in critical care 2) To study the factors affecting enteral nutrition effect of EN on outcome of children in relation to morbidity and mortality.

Materials & Methods: A time bound prospective observational study over period of one year of all children in a age group of 1-18 years admitted to PICU. Inclusion criteria: 1) Admission for more than 24 hours 2) Guardian of the patient giving informed consent.
Exclusion criteria: 1) Age less than 1 year 2) Duration of stay less than 24 hours. All children admitted to PICU meeting the inclusion criteria were enrolled and details filled in the prestructured proforma. Exact time of starting the enteral nutrition and the time of achieving goal were noted. Affecting factors like shock, ventilation, surgery and outcome of the patient were studied.

Results: This study aimed to study the factors that affect enteral nutrition practices in a PICU and their outcome. It was observed in our study that the presence of ventilatory support, shock, AKI and a higher PRISM score were associated with higher incidence of not achieving full feeds.

Conclusion: To promote the early use of enteral nutrition and to provide structured multidisciplinary approach so that tolerance can be enhanced and complications can be minimized.

Keywords: PICU, PRISM, BMR, Enteral, nutrition.

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INTRODUCTION

Malnutrition is prevalent among patients in the pediatric intensive care unit (PICU) and has been shown to worsen over the course of the PICU stay. [1, 2] In critically ill children, malnutrition is associated with an increased PICU length of stay (LOS) and an increased risk-adjusted mortality. [3] The benefits of nutrition support in the critically ill patient include improved wound healing, a decreased catabolic response to injury, and improved gastrointestinal structure and function. [4, 5]

While data from randomized controlled trials in adults have shown the benefits of enteral nutrition (EN) in contrast to parenteral nutrition (PN), [6, 7] these effects are as yet unproven in critically ill children. Multiple adult randomized controlled studies have shown the benefits of early EN in postsurgical [8] and trauma patients. [9] Randomized controlled trials in mixed adult ICU patients have shown that early EN decreases mortality [10] and LOS, [11] while some studies have shown increases in infectious [12] and noninfectious complications. [10-12] Adult guidelines recommend the initiation of EN in the critically ill patient.

In critically ill children, EN is generally recommended, but there are no recommendations on when it should be started. [13] Early EN (EEN), defined as EN that is begun within 48 hours of admission to the PICU, [14] has been shown to be feasible in critically ill children, [15] and an overall higher enteral energy intake has been associated with reduced mortality. However, no data are available regarding EEN and outcomes in the PICU. The purpose of study was to determine whether EEN is associated with lower mortality, shorter LOS, and shorter duration of mechanical ventilation (MV) in critically ill children.

Malnutrition is associated with increased mortality and morbidity to include susceptibility to infectious complications, such as pulmonary infections, urinary infections, wound infections, and sepsis, and susceptibility to non-infectious complications, such as respiratory failure and cardiac arrhythmias.

Acute and chronic illness, trauma, and inflammation induce stress related catabolism, increasing the metabolic rate at which the body breaks down food. In addition to this, drug-related side effects may affect ingestion and lead to loss of appetite or nausea and vomiting, or both, and it has been suggested that hospital routines and lack of awareness among nursing staff may affect nutritional care. [15]

Critically ill people, who may be unconscious, unable to feed themselves or unable to receive oral nutritional support, or both, are at increased susceptibility to malnutrition.

Nutritional support is a complex aspect of care for critically ill people. It is aimed specifically to address the route of delivery that will optimize uptake of nutrition.

Enteral nutrition (EN) refers to the delivery of a nutritionally complete feed via a tube into the stomach, duodenum, or jejunum. This method is suitable for people who have inadequate oral intake but a functional gastrointestinal tract, and is an effective method of providing nutrition to particular patient groups especially with sepsis or with acute pancreatitis.

Enteral Nutrition helps to maintain the function and integrity of the gut barrier, and is associated with increased immunoglobulin A production, which in turn may provide increased protection against airway infections.

However, critically ill people may not tolerate enteral feeding well, and side effects such as nausea and vomiting may occur, and non-occlusive bowel

necrosis. In addition, high volumes of gastric residual may allow bacteria to colonize, and increase the risk of aspiration and complications, such as ventilator associated pneumonia.

Furthermore, Enteral Nutrition can be disturbed by patient care and diagnostic interventions, particularly among people receiving respiratory support, and this may affect the capacity for enteral nutrition to maintain nutritional goals.

Parenteral nutrition (PN) is unphysiological and bypasses the gastrointestinal tract and portal venous system. It delivers a nutritionally complete feed intravenously via a central or peripheral venous catheter which may be used as an alternative for people in need of nutritional support. It offers the advantage of ease of administration to the person , often with no further intervention needed to provide nutritional support when all components are administered via an ’all in one bag’ system. While interrupting feeding during patient care is not necessary, it may increase the risk of overfeeding.

Parenteral nutrition is associated with a higher rate of hyperglycaemia; subsequently, people may require glycaemic control alongside it. Earlier studies have reported increased susceptibility to infectious complications, such as catheter-related bloodstream infections. It may be used to supplement enteral nutrition to achieve target energy requirements when enteral nutrition alone is inadequate .Research findings are unclear regarding sufficient caloric intake needed to meet the energy requirements of critically ill people, and no evidence currently supports the assumption that these people benefit from a normocaloric intake (80% to 100% of energy requirements) rather than permissive underfeeding (less than 70%of energy requirements).

Similarly, a target time for initiation of nutrition has been debated by researchers, with large randomized controlled trials (RCTs) (e.g. the

EDEN (Early versus delayed enteral feeding to treat people with acute lung injury or acute respiratory distress syndrome) study; the EPaNIC (Early Parenteral Nutrition Completing Enteral Nutrition in Adult Critically Ill Patients) study, providing evidence that conflicts with European Nutrition guidelines , which advise early feeding during critical illness.

Nutrition is required for the normal growth and development. Adverse effects on cognition during later stages of life can develop due to nutritional deficiency. Due to limited macronutrient store and relatively higher energy requirements than adults admitted to ICU, optimal nutrition support is of paramount importance for critically ill children. Such children have high risk of malnutrition due to stress induced increased BMR and protein catabolism. Optimal nutrition delivery in pediatric ICU is main core of critical care, since it combats the metabolic changes which accompany acute illness and injury, prevent immune system dysfunction, promote tissue repair, prevent lean muscle mass loss and minimize weight loss.

The preferred mode of intake of nutrition in critically ill children with functioning bowel is enteral nutrition. The delay in initiating and proceeding enteral nutrition can result in non fulfillment of target energy and protein delivery goals. Advantages of enteral nutrition include maintaining the integrity of mucosa of intestine, preventing translocation of bacteria, maintaining the hemodynamic status, in children; further decreasing infection rate, improving the status of immunity, thus decreasing morbidity and mortality.

Though the advantages of enteral nutrition in ill children are known and it is also known that delay in enteral nutrition leads to more complications like more infection rate, delay in recovery, thus prolonged hospital stay but there is no study done from the region to know the factors affecting enteral nutrition in children pediatric ICU. Although studies are available on practices of enteral nutrition in pediatric ICUs of developed countries but

there is paucity of literature in developing countries .Since children in developing countries have underlined malnutrition, further delay in nutrition may lead to more complications. Hence, there is need to study factors affecting enteral nutrition in children admitted to pediatric ICU.

Achieving optimal nutrition therapy is a crucial and fundamental goal of the pediatric intensive care unit (PICU) as inadequate nutrition during children's critical illness is attributed to high rates of multiple organ dysfunctions, complications, length of stay, and mortality. [16, 17] This is because the acute stress response to critical illness is marked by significant protein catabolism, wherein the lack of adequate protein intake leads to ongoing negative nitrogen balance and loss of body mass. [18, 19]

The advantages of enteral nutrition are known, but in critically ill children admitted in pediatric ICU, there may be many factors leading to delay in initiation of enteral nutrition. These factors could be presence of shock, high inotropes, altered sensorium, on non invasive ventilation, vomiting, intolerance to feeds etc. Though there are many factors, but there is no prospective study available from region, where these factors are studied and also to determine affect of these factors on ultimate outcome of these critical ill patients.

When compared with acute physiological needs of critical ill child, nutritional support is often considered secondary; however need of study is to recognize it as key therapeutic modality.

Table 2
Descriptive analysis and Relative Importance Index of the PICU healthcare workers perceived barriers to enteral feeding.

Delivery of enteral nutrition to the patient
In resuscitated, hemodynamically unstable patients, other aspects of patient care still take priority over nutrition.
Delays and difficulties in obtaining small bowel feeding access in patients not tolerating other types of enteral nutrition (i.e., high gastric residual volumes).
Severe fluid restriction (particularly postoperative cardiac surgery).
Delay in physicians requesting the initiation of EN.
Delays in starting motility agents in patients not tolerating enteral nutrition (i.e., high gastric residual volumes).
Conservative PICU feeding protocol.
Waiting for the physician to order and check the x-ray to confirm tube placement.
Difficulty in delivering enteral feed due to feeding tube obstruction or pump delivery problems with thickened formula.
Nutrition therapy not routinely discussed on ward rounds.
Frequent displacement of the feeding tube, requiring reinsertion.
Dietician-related factors
No or not enough dietitian coverage during evenings, weekends, and holidays.
Waiting for the dietitian to assess the patient.
Not enough time allocated to education and training on how to feed patients optimally.
Dietitian was not routinely present on weekday patient rounds.
Resource-related factors
Delays in preparing or obtaining nonstandard enteral feeds.
No or not enough feeding pumps available in the unit.
Clinical practices and behaviors
Enteral feeds being withheld in advance of procedures or operating department visits.
Enteral feeds withheld for bedside procedures, such as physiotherapy, turns, and the administration of certain medications.
Enteral feeds withheld due to diarrhea.
Non-PICU physicians (i.e., surgeons and gastroenterologists) requesting patients not to be fed enterally.
Lack of familiarity with current guidelines for nutrition in the PICU.
Fear of adverse events owing to aggressively enterally feeding patients.
The general belief among the PICU team that the provision of adequate nutrition does not affect patient outcomes.
Lack of staff knowledge and support around breastfeeding mothers.
Nurses failing to increment feeds as per the feeding protocol.

FIGURE 1: CATEGORIES OF BARRIERS TO ENTERAL FEEDING [20]

Furthermore, no validated and reliable survey tool exists for PICUs to explore the barriers to EN in critically ill pediatric patients. The development and validation of such a tool would allow individual PICUs to assess barriers in their PICU and address them in a quality improvement process. The identification of barriers to feeding allows us to develop interventions to intervene to address these barriers actively. [20]

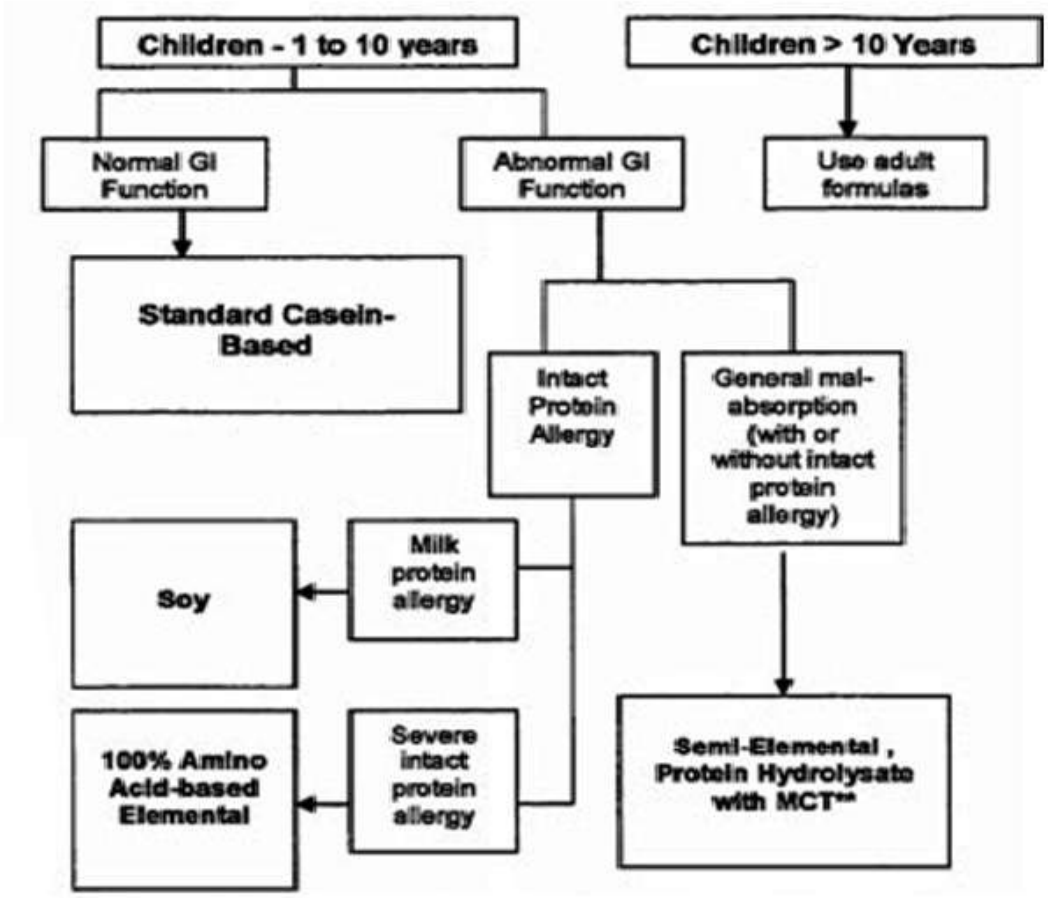
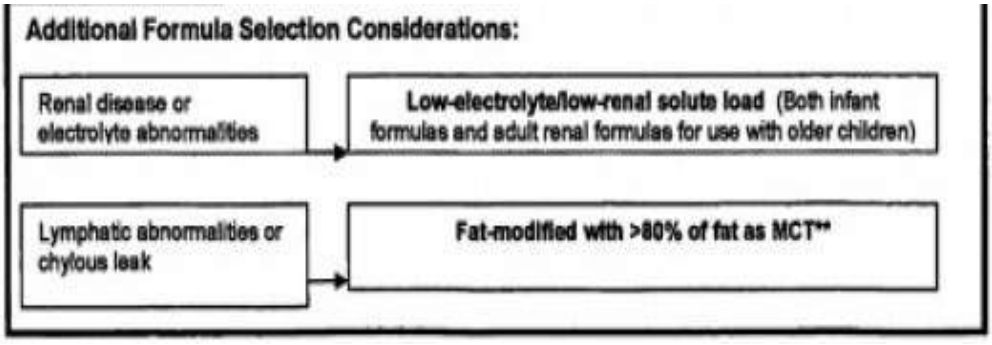


FIGURE 2: ALGORITHM FOR CLINICALLY APPROPRIATE FORMULA SELECTIONS [21]


Additional Formula Selection Considerations:
Renal disease or electrolyte abnormalities
Low-electrolyte/low-renal solute load (Both infant formulas and adult renal formulas for use with older children)
Lymphatic abnormalities or chylous leak
Fat-modified with >80% of fat as MCT**

[21]

FIGURE 3: MODIFIED FORMULA FEEDS IN SPECIAL CASES

Consequently, momentum is increasing to address the many remaining unanswered questions. The questions of identifying appropriate energy and protein requirements, selection of appropriate formulas to meet these requirements, nutrition education for PICU clinicians, and solutions to overcome barriers are all fertile areas for ongoing investigation into nutrition support for critically ill children. Optimal nutrition therapy must continue to be in the forefront in pediatric critical care to improve patient outcomes.

AIMS AND OBJECTIVES

1. To evaluate the current practice of enteral nutrition in critical ill children.
2. To study the factors affecting enteral nutrition.
3. To study affect of Enteral Nutrition on outcome of children inrelation to morbidity and mortality.

REVIEW OF LITERATURE

The practice of Pediatric intensive care has thrown open new challenges to those interested in the acute effects of critical illness on metabolism. In the developed countries, there is already a well established system of handling pediatric emergencies and intensive care system.

Early intensive care has lead to improved outcome and decreased mortality and morbidity in pediatric age groups in the recent years. However, in the developing countries, intensive care facilities are still limited. PICU setups in India require trained personnel as well as finances. Caring for critically ill pediatric patients is demanding and outcome is directly dependent on the training level and the expertise of treating physician as well as availability of facilities.

Achieving optimal nutrition therapy is a crucial and fundamental goal of the pediatric intensive care unit (PICU) as inadequate nutrition during children's critical illness is attributed to high rates of multiple organ dysfunctions, complications, length of stay, and mortality. This is because the acute stress response to critical illness is marked by significant protein catabolism, wherein the lack of adequate protein intake leads to ongoing negative nitrogen balance and loss of body mass.

Hamilton et al evaluated the impact of implementing an enteral nutrition (EN) guidelines on achieving optimal EN delivery in the Pediatric Intensive Care Unit (PICU) by designing a Prospective pre/post implementation audit of EN practices upon a setting of One 29-bed medical/surgical PICU in a free standing, university affiliated children's hospital, sample size composed of consecutive patients admitted to the PICU over two 4-week periods pre and post implementation, with a stay of >24 hours who received EN. This showed significant improvement in EN delivery a

decreased dependence on PN in critically ill children. Target energy intake goal was reached earlier in a higher proportion of patients.[21-23]

Mehta et al evaluated the impact of protein intake on outcomes in pediatric critical illness by examining the association between protein intake and 60-d mortality in mechanically ventilated children by designing a prospective, multicenter, cohort study that included 59 pediatric intensive care units (PICUs) from 15 countries and enrolled consecutive children (age: 1 mo to 18 y) who were mechanically ventilated for 48 h. They enrolled 1245 subjects (44% female) with a median age of 1.7 y (IQR: 0.4, 7.0 y). A total of 985 subjects received enteral nutrition, 354 (36%) of whom received enteral nutrition via the post-pyloric route.

Early initiation, post-pyloric route, shorter interruptions, larger PICU size, and a dedicated dietitian in the PICU were associated with higher enteral protein delivery. They concluded that Delivery of 60% of the prescribed protein intake is associated with lower odds of mortality in mechanically ventilated children. Optimal prescription and modifiable practices at the bedside might enhance enteral protein delivery in the PICU with a potential for improved outcomes.[24-25]

Jacob et al studied delay of EN in critically ill children admitted to pediatric intensive care units (PICUs), due to gastrointestinal dysfunction or interrupted guidelines for PN administration to critically ill children And summarized the most recent literature that provides evidence on the implications for clinical practice with regard to the use of early supplemental PN in critically ill. They concluded that the lack of other RCTs in this specific field makes it challenging to compare these findings with other available recent studies.

Further research, in the form of multicenter RCTs, is warranted to determine the optimal composition and ideal timing of initiation of supplemental PN in critically ill children. [26-28]

Brown et al evaluated Malnutrition in the critically ill or injured child is associated with increased morbidities and mortality in the pediatric intensive care unit (PICU), whether present upon admission or acquired during the PICU stay. Enteral nutrition (EN), the preferred route of nutrient delivery, may be a crucial component of care provided in the PICU which modifies the response to critical illness or injury, resulting in improved outcomes. Numerous challenges exist in the delivery of the EN goal in critically ill children. They described the current state of the science and challenges related to EN prescription and delivery in the critically ill child. Suggestions for improving EN practice were presented, in addition to a platform for further research inquiry. [29-31]

Mara et al performed a cohort study in the year 2009 and 2010 in a 22 bed multi specialty PICU at the Royal Hospital for Sick Children, Glasgow to evaluate enteral nutrition practices and nutritional provision in children during their entire stay in PICU. It was found that beginning of enteral nutrition was significantly delayed in patients among General Surgery and Congenital Heart Defects group as Compared to those in medical group. Lesser amount of fluids and lesser NSDs found in those from the CHD Surgical group compared with those with medical conditions. Protein and energy requirements were achieved in 38% and 33% of the NSDs. In a substantial proportion of NSDs, minimum micronutrient recommendations were not met particularly in those patients from the CHD Surgical group. [32-34]

A higher delivery of fluid requirements (p< 0.05) and a greater proportion of these delivered as EN (p< 0.001) were associated with median energy intake during stay and delay of EN advancement. The factors

contributing to non fulfillment of target energy requirements were found to be fasting for either procedure, interventions in PICU and other clinical reasons, fluid restriction (39%) for clinical reasons, procedures requiring feed cessation and establishing EN (22%) were the most common reasons, why target energy requirements were not met. [32-34]

Zamberlan et al evaluated NT administered to 90 consecutive patients who were hospitalized for 7 days in the PICU of Instituto da Criança, Hospital das Clínicas, Universidade de São Paulo, and Brazil. NT was established according to the protocol provided by the institution's NT team and concluded that malnutrition is prevalent in critically ill children. Nutrition intervention in children, guided by a multidisciplinary team and nutrition support protocols and monitored by anthropometric assessment, may help reduce nutrition deficits during hospitalization in the PICU. It is possible to introduce early gastric EN, and PN should be indicated when the digestive tract is not functioning or when EN alone is unable to meet the nutrition demands of the patient. [35-37]

Canarie et al studied nutritional practices in 6 medical-surgical PICUs in a retrospective cross-sectional study using medical records as source of data Patients—Children < 21 years old admitted to the PICU for ≥ 72 hours excluding those awaiting or recovering from abdominal surgery and concluded that Institutions in this study initiated EN for a high percentage of patients by 48 hours of admission. Non-invasive positive pressure ventilation was most strongly associated with delay EN. A better understanding of these risk factors and assessments of nutritional requirements should be explored in future prospective studies. [38-40]

Pollack et al defined malnutrition, as deficient protein: energy ratio, in 16% of 50 children admitted to their pediatric intensive care unit (PICU). [41]

The study carried out led to establishment of successful nutritional

practices in children admitted in pediatric ICU. It was multicenter study of nutrition and outcomes in retrospective fashion. It also revealed early enteral nutrition is associated with significantly lower total hospital charges after adjusting for severity of illness and no difference in hospital length of stay between 2 groups.

Hulst et al studied and noted a 39% weight loss and 40% lean body mass loss in 98 critically ill, mechanically ventilated children which they attributed to the cumulative energy deficit of 100 kcal/kg and accompanying cumulative protein deficit of 10 gm/kg. In the study patients enrolled were evaluated under duration of ventilator stay and outcome on establishment of feeds and nutritional practices and impact on anthropometrical measurements in terms of weight, height, BMI at time of admission and at time of discharge. [42]

Tume et al carried out study in 47 PICU children out of which more than 55 percent received less than half of their estimated caloric requirements and in those suffering with heart diseases , estimated caloric requirement was found to be 27 percent. [43]

Mehta et al in an international investigation of nutritional practices in critically ill children reported a greater than 30% prevalence of malnutrition at PICU admission, and established according to the protocol provided by the institution's NT team and concluded that malnutrition is prevalent in critically ill children. Nutrition intervention in children, guided by a multidisciplinary team and nutrition support protocols and monitored by anthropometric assessment, may help reduce nutrition deficits during hospitalization in the PICU. [44]

Kyle et al found inadequate energy and protein delivery over an 8-day PICU stay. The parameters like age, gender, demographics, indication of admission, need of inotropic support, ventilator requirement and duration

of its use. [45]

The ongoing prevalence of malnutrition in the PICU population, which can substantially deteriorate during hospitalization and has been associated with prolonged mechanical ventilation, increased length of stay, and poor patient outcomes. [46-49]

Enteral Nutrition is preferred in those children with a functioning gastrointestinal (GI) tract. It is cost-effective, more physiological and well tolerated by many critically ill children. [50-53]

Chellis et al demonstrated safety and efficacy of early EN in a PICU population. The 2009 A.S.P.E.N. clinical guidelines for nutrition support in critically ill children endorse EN; however, there is no specific recommendation for timing of EN initiation. [54]

Briassoulis and colleagues demonstrated improved protein balance using an aggressive early EN protocol that reduced the duration of catabolism known to accompany critical illness. [55]

In a retrospective review, Taylor et al reported initiation of EN within 24 hours of PICU admission. [56]
Using a post-pyloric feeding tube in a recent small case series of older children, Khlevner et al successfully initiated EN within 24 hours of admission and attained target feeds within 48 hours of tube placement. [50]

Product category	Product features
Standard casein based	Intact nutrients; lactose free
Soy based	Milk and lactose free
Semi elemental protein hydrolysate with MCT	Hypoallergenic, lactose free, and a blend of MCT and long chain triglycerides for those with protein maldigestion, food allergies, fat malabsorption
100% amino acid–based elemental	Amino acid based, lactose free with MCT for those intolerant to hydrolyzed protein, severe food allergies, short bowel syndrome, and gastric disorders such as eosinophilic esophagitis

FIGURE 4: CATEGORIES AND CONSTITUENT OF AVAILABLE ENTERAL FEEDS [57]

Pediatric products are designed to meet the daily recommended intake (DRI) for children 1 to 8 years of age in 1,000 mL daily and 1,500 mL daily for children between 9 and 13 years. [57] Vitamins and minerals may require supplementation and solute loads should be monitored. Caloric density in pediatric products ranges from 1 to 1.5 kcal/mL, and may be beneficial for those patients with fluid restriction and/or increased energy requirements. Reduced calorie pediatric products are also available; these provide approximately 0.6kcal/mL and are indicated for children with lower energy needs (e.g., degenerative neuromuscular disorders). Enteral formulas are available with or without fiber and high protein formulations are available for those patients who exhibit increased protein needs (trauma or thermal injury).

Specialty products are available for specific disease states such as renal and lymphatic abnormalities for both infants and pediatric patient. Additionally, adult products for conditions such as acute respiratory failure, diabetes mellitus, impaired skin integrity, and the immuno-compromised patient are available. [58]

Product category	Product features
Low electrolyte	Milk based; low electrolyte for renal impairment. Iron supplementation may be needed for infant formula. Caloric density in pediatric/adult products vary
Fat modified	High MCT (>80%) for those with defects in fat breakdown, fat absorption, or defective lymphatic transport. Risk of essential fatty acid deficiency due to minimal LCT

FIGURE 5: CATEGORIES OF MODIFIED FEEDS AND THEIR INDICATIONS [58]

PRISM SCORE-The Pediatric Risk of Mortality scoring system is a revision of the Physiological Stability Index (PSI) to assess the severity of illness in the pediatric population.

The PRISM is used to compare and evaluate performance and resource use amongst various PICUs. It is based on 17 physiological variables subdivided into 26 ranges. The PRISM has a constant relation between

the number of organ systems involved and the mortality risk in a given PICU at 12 and 24 hours. Scoring systems such as the Pediatric Risk of Mortality (PRISM) score and Pediatric Index of Mortality (PIM) are widely used in pediatric intensive care.

These are third generation scoring systems that allow assessment of the severity of illness and mortality risk adjustment in heterogeneous groups of patients in an objective manner. The purpose of their usage varies, and may include comparison of severity of illness between different treatment arms in clinical trials and comparison of quality of care between pediatric intensive care units (PICUs) using standardised (that is, severity of illness adjusted) mortality rates. Both the PRISM and PIM scoring system have been developed and carefully validated in tertiary PICUs.

PRISM III	PIM 2	PIM 3
SBP (mmHg)	Absolute (SBP-120)	SBP at admission
Heart rate (/min)	Pupils fixed to light (Y/N)	Pupils fixed to light (Y/N)
Body temperature (°C)	FiO_2X100/PaO_2 (mmHg)	FiO_2X100/PaO_2 (mmHg)
Pupil reflex	Absolute (base excess)	Absolute (base excess)
Mental status	Mechanical ventilation	Mechanical ventilation in the first hour (Y/N)
Total CO_2 (mmHg)	Elective admission (Y/N)	Elective admission (Y/N)
pH	Recovery post procedure	Recovery post procedure
$PaCO_2$ (mmHg)	Bypass (Y/N)	From bypass cardiac surgery
Glucose (mg/dl)		From non-bypass cardiac surgery
Potassium (mEq/l)		From non-cardiac procedure
Creatinine (mg/dl)	Risk factor[a]	Risk factor[b]
BUN (mg/dl)	Low-risk diagnosis	Low-risk diagnosis
White blood cell	High-risk diagnosis	High-risk diagnosis
Prothrombin time		Very high-risk diagnosis
Partial thrombin time		
Platelets		

FIGURE 6: COMPARISON OF VARIOUS RISK SCORES OF MORTALITY IN PICU [59]

Darawad et al. studied that amongst nurses who participated in their study agreed to the same point where feeding becomes a secondary priority compared with other ICU tasks. [20] This might be due to a lack of knowledge about the importance of EN, which can be due to the complicated tasks in the ICU, work pressure, and not enough staffing. Critically ill patients developed risk of developing complications such as muscle weakness, nosocomial infections, and prolong ventilatory support that may be related to undernutrition and malnutrition. [60]

The top perceived barrier reported by Roger et al. and Tume et al. in PICU was “fluid-restrictive policies.” [15-17] In addition, “interruption of feeds for procedures” was also identified as the main barrier because it affected a comparable number of patients as the fluid restriction. [20]

Another perceived barrier was the delays and difficulties in obtaining small bowel access in patients not tolerating other types of EN, contrary to a study that was notable for no or not enough feeding pumps.

Furthermore, the third top perceived barrier was a severe fluid restriction, particularly in postoperative cardiac surgery. In fact, it is the most often reported barrier in the literature in pediatric ICU. Rogers et al. pointed out in their study that the main barrier to provide adequate nutrition in critically ill children in PICU was fluid restrictions, particularly in infants undergoing cardiac surgery. [61]

The remaining barriers to the delivery of EN to the patient were comparable to Cahill et al. study, which showed the following barriers to EN delivery; “feeding tube not in place, delay in physicians’ orders, delay in initiation of motility agents, lack of EN formula or feeding pumps, and delay in the initiation time of EN.” [62]

In addition, the unavailability of dietitians during the evening, weekends,

and holidays was the highest-rated barrier by the HCW in this study when it comes to Dietitian-Related Barriers. Cahil et al. revealed this barrier out of the ten most common barriers in their study. [62]

However, it appears that even if the dietitians were available, they have not dedicated enough time to discuss and educate how to optimize nutritional support. Nutritional support is a multidisciplinary task, and the dietitian presence is very important to ensure safe and optimal nutrition delivery to ICU patients. [60]

The unavailability of resources such as special formulas or feeding pumps can delay the delivery of EN, and therefore put the patient at risk of the underfeeding condition.

Therefore, to overcome such issues, collaboration between nurses, physicians, and dietitians is recommended. [62] ICU resources (e.g., the lack of availability of enteral formula or feeding pumps) have been noted to be one of the five most important resource-related barriers from a nursing perspective. This indicates that identifying resource-related barriers are aneffective strategy for improving nutrition practice. [63]

In addition to the barriers associated with the delivery of EN, Dietitians, and Resources, it appears that many variables were related to unfamiliarity with the nutritional guidelines and recommendations among HCW. In the same way, Darawad et al. [63] and Hammad et al [60] agreed that the lack of knowledge among nurses about feeding protocols was an essential barrier.

The availability of clear guidelines, educational programs, and protocols will aid in overcoming barriers of delivering optimal nutrition in the pediatric critical care unit and enhance compliance among HCW. [64]

With regard to clinical practices and behavioral barriers, the top perceived barrier was enteral feeds being withheld before procedures or operating department visits, followed by enteral feeds withheld for ICU procedures such as physiotherapy, turns, and the administration of certain medications as the second top perceived barrier. This can be explained by the fact that taking care of a critically ill patient includes multiple interventions, which often compete with the delivery of EN in the intensive care setting.

Elective procedures, unplanned interventions, or diagnostic tests often require a fasting state, requiring the interruption of EN. However, many of those interruptions are avoidable. [65]

From a nursing perspective, bathing has been reported to be the most frequent reason for EN interruption. Moreover, bed linen changes, wound dressing changes, and exchanging empty infusion bags have also been reported to be one of the reasons behind EN interruption. [66]

There was consensus among clinicians that feeds should be stopped for the suspicion of necrotizing enterocolitis, hemodynamic instability, after cardiac arrest, planned extubation, planned intubation, surgery scheduled in the operating room, endotracheal tube change planned, and gastrointestinal endoscopy. However, there is marked variability among clinician perceptions with regard to indications for delays to and interruptions of EN. [67]

Mehta et al reported that 20% of interruptions in pediatric critically ill patients due to radiology procedures were avoidable. [65] As for the overall barriers to enteral feeding, the dietician related barriers have been considered to be the top perceived barrier. However, dietitians or physicians have historically been the focus of nutrition guideline implementation activities. [68] Critical care nurses play a key role in

implementing the nutrition plan of care for patients in the ICU as the (EN) is the primary mode of delivering nutrition to critically ill patients. [69]

MATERIAL AND METHODS

This prospective observational study was conducted over a period of 1 year in patients admitted to the PICU of Dayanand Medical College and Hospital, Ludhiana.

Duration of the study

This was a time bound prospective observational study from November 2020 to November 2021 and was done on critically ill children of age between 1 to 18 years, having a PICU stay of at least 24 hours, to evaluatefactors affecting enteral nutrition in children admitted in pediatric ICU of department of Pediatrics, DMC&H, Ludhiana.

INCLUSION CRITERIA

1) Admission for more than 24 hours
2) Guardian of the patient giving informed consent for enrolment in the study.

EXCLUSION CRITERIA

1) Age less than 1 year
2) Duration of stay less than 24 hours

OUTCOME

The outcome of our study was to evaluate for the time it takes for fulfillment of target nutritional requirements in critical ill children aged 1 to <18 years admitted in pediatric ICU and also the factors affecting the enteral nutrition.

Method of Collection of Data

A total of 124 cases were enrolled during the study period. During the course, initially the day of initiation of feeds was defined, mode of feeding was decided and age appropriate NG/OG feeding tubes were inserted and the volume of feeds in ml was quantified in a pre- structured proforma.

Further, feeds were modified in children as per the underlying pathological

condition by the Chief Dietician and noted.

Here, Full EN—100% of the volume prescribed by the nutrition team. Full feeds not achieved was taken if patient could not tolerate volume prescribed during course of PICU stay.

During this process, certain factors were noted to be a hindrance in enteral nutrition practices. Some of these factors include presence of Acute Kidney Injury, shock, hepatic encephalopathy, etc.

CASES DEFINITIONS:

Acute Kidney Injury-Acute kidney injury (AKI) has been traditionally defined as an abrupt loss of kidney function leading to a rapid decline in the glomerular filtration rate (GFR), accumulation of waste products such as blood urea nitrogen (BUN) and creatinine(>1.3), and dysregulation of extracellular volume and electrolyte homeostasis.

Shock-Shock is an acute process characterized by the body's inability to deliver adequate oxygen to meet the metabolic demands of vital organs and tissues.SBP less than 5th percentile for age was being noted.

Inotropes used - Dopamine, Dobutamine, Epinephrine, and Norepinephrine & Vasopressin.

Hypokalemia-Defined as serum potassium levels less than 3.5 meq/l.

Heart Failure- Heart failure develops when the heart, via an abnormality of cardiac function (detectable or not), fails to pump blood at a rate commensurate with the requirements of the metabolizing tissues or is able to do so only with an elevated diastolic filling pressure. Clinically characterised by tachycardia (noted in vitals), dyspnea, so noted from presumptive diagnosis made at time of admission.

Weight – weight in kilograms was plotted on WHO IAP growths charts (as shown in annexure) for males and females and was interpreted as –

For less than 5 years:

- Less than 3rd percentile
- 3 rd to 50th percentile
- 50th to 97th percentile

For more than 5 years:

- Less than 3rd percentile
- 3 rd to 10th percentile
- 10th to 25th percentile
- 25th to 50th percentile
- 50th to 75th percentile
- 75th to 90th percentile
- More than 97th percentile

Height – Height in centimeters was plotted on WHO IAP (as shown in annexure) growth charts for males and Females and was interpreted as-

For less than 5 years:

- Less than 3rd percentile
- 3rd to 50th percentile
- 50th to 97th percentile

For more than 5 years:

- Less than 3rd percentile
- 3 rd to 10th percentile
- 10th to 25th percentile
- 25th to 50th percentile
- 50th to 75th percentile
- 75th to 90th percentile
- More than 97th percentile

Height less than 3rd percentile for age – according to WHO IAPgrowth

chart, was taken as short stature.

STATISTICAL ANALYSIS -

Data were described in terms of range, mean ± standard deviation, median, frequencies (number of cases) and relative frequencies (percentages) as appropriate. Comparison of quantitative variables between the study groups was done using student t-test and Mann Whitney U test for independent samples for parametric and non-parametric data respectively. For comparing categorical data, Chi-square ($\chi 2$) test was performed and an exact test was used when the expected frequency is less than 5. A probability value (p-value) less than 0.05 was considered statistically significant. All statistical calculations were done using SPSS (Statistical Package for the Social Science) SPSS 21 version statistical program for Microsoft Windows.

OBSERVATIONS AND RESULTS

Our study was conducted in the PICU in the inpatient Pediatric department on children from 1 -18 years of age from the Pediatric ICU of Dayanand Medical College and Hospital, Ludhiana after a minimum stay of 24 hours.

TABLE 1- AGE DISTRIBUTION IN THE STUDY

AGE GROUP (in years)	No. of cases	Percentage
< 5	53	42.7%
5-10.0	36	29.0%
> 10	35	28.2%
Total	124	100.0%

In Table 1: 53 (42.7%) patients were below the age of 5 years followed by 36 (29%) cases belonged to the age group of 5 to 10 years and 35 (28.2%) patients were above the age of 10 years.

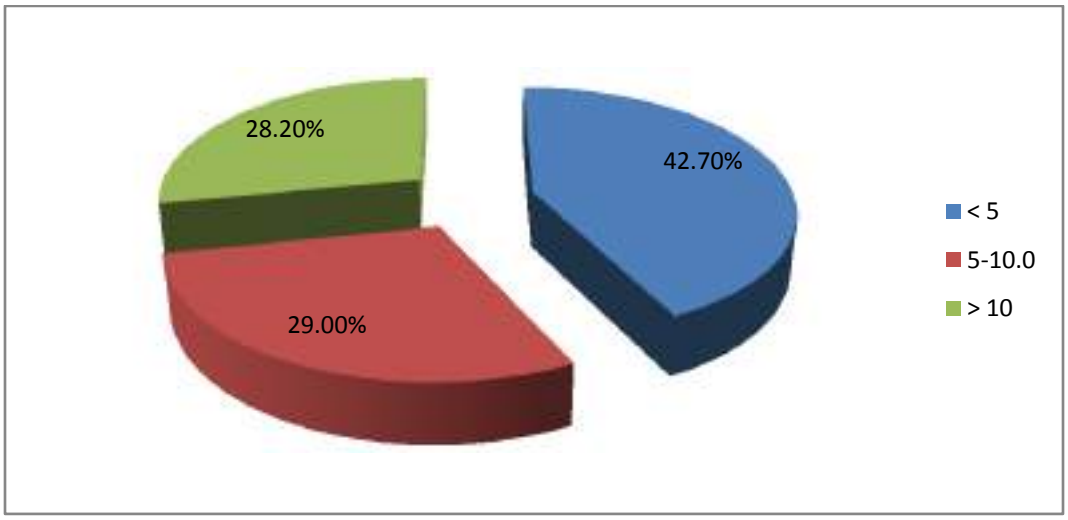


FIGURE 7: AGE DISTRIBUTION IN THE STUDY

TABLE 2- GENDER DISTRIBUTION IN THE STUDY

Sex	No. of cases	Percentage
Female	37	29.8%
Male	87	70.2%
Total	124	100.0%

In Table 2: out of total 124 enrolled PICU subjects, 87 (70.2%) were males and only 37 (29.8%) were females.

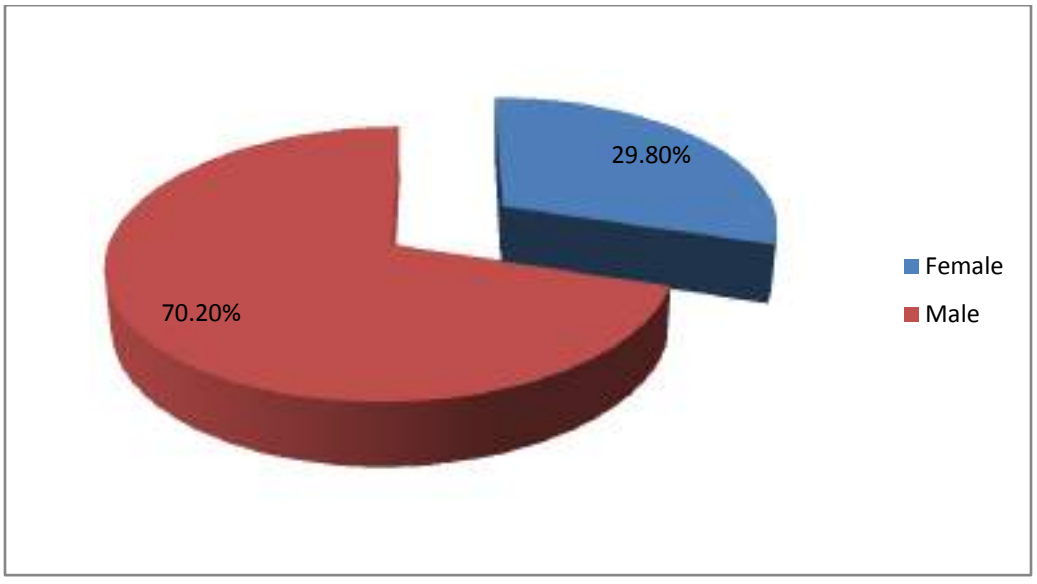


FIGURE 8: GENDER DISTRIBUTION IN THE STUDY

TABLE 3- TABLE SHOWING COMPARISON OF ANTHROPOMETRIC INDICESAND PRISM SCORE

	N	Minimum	Maximum	Mean	Standard Deviation
Age (year)	124	1.00	16.00	7.13	5.18
weight (kg)	124	6.00	70.00	25.98	17.32
Height (cm)	123	30.00	186.00	115.57	31.94
PRISM SCORE	124	0.00	21.00	7.85	3.86
Duration of stay (Days)	123	1.00	20.00	5.58	4.01

Mean age of total population of the study was 7.13 years.

Mean weight of enrolled cases was 25.98 kg.

Mean height was 115.57 cms.

Mean duration of stay was 5.58 days.

TABLE 4- TABLE SHOWING INDICATION OF PICU ADMISSION

Indication of PICU admission	No. of cases	Percentage
AKI	1	0.8%
Altered sensorium	17	13.7%
Electrolyte abnormality	4	3.2%
Observation	13	10.5%
Others	11	8.9%
Persistent bleeding	3	2.4%
Recurrent seizures	4	3.2%
Resp. distress	39	31.5%
Resp. failure	16	12.9%
Shock	15	12.1%
Tachycardia	1	0.8%
Total	124	100.0%

In Table 4, out of total PICU admissions over the time period of conducted study, most common indication of admission was respiratory distress which was present in 39 (31.5%) patients. Second most common indication was altered sensorium found in 17 (13.7%) cases followed by respiratory failure in 16 (12.9%) cases and shock in 15 (12.1%) cases. Other indications were, unspecified in 11 (8.9%) patients followed by recurrent seizures and electrolyte abnormalities in 4 (3.2%) patients each, persistent bleeding in 3 (2.4%) patients, AKI and tachycardia in 1 (0.8%) patient each.

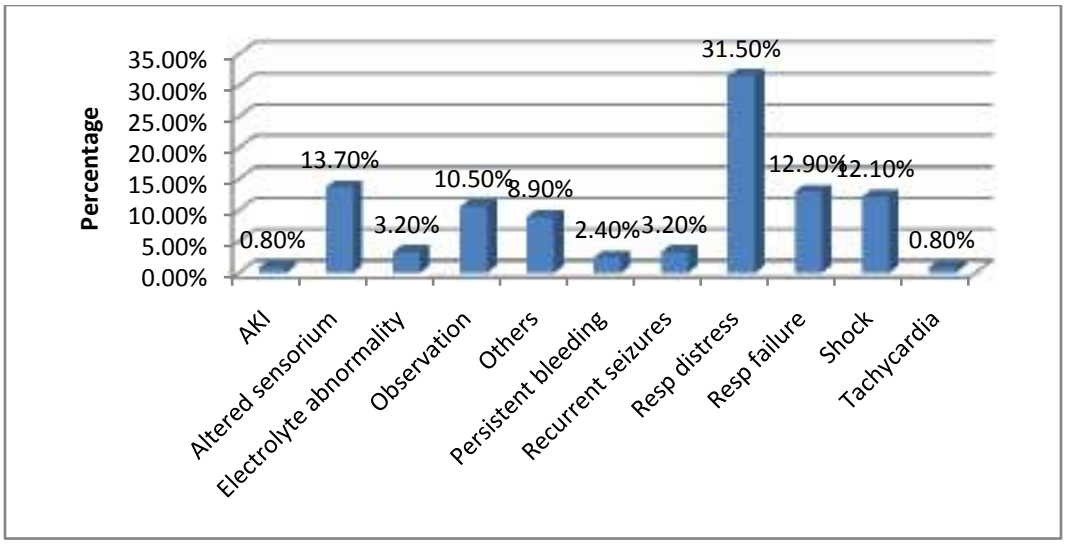


FIGURE 9: FIGURE SHOWING INDICATION OF PICU ADMISSION

TABLE 5- TABLE SHOWING REQUIREMENT OF INVASIVE VENTILATION

Ventilator	No. of cases	Percentage
No	94	76.7%
Yes	30	24.2%
Total	124	100.0%

In Table 5, out of total 124 PICU subjects, 30 (24.2%) patients require ventilatorand 94 (76.7%) cases don't require ventilator.

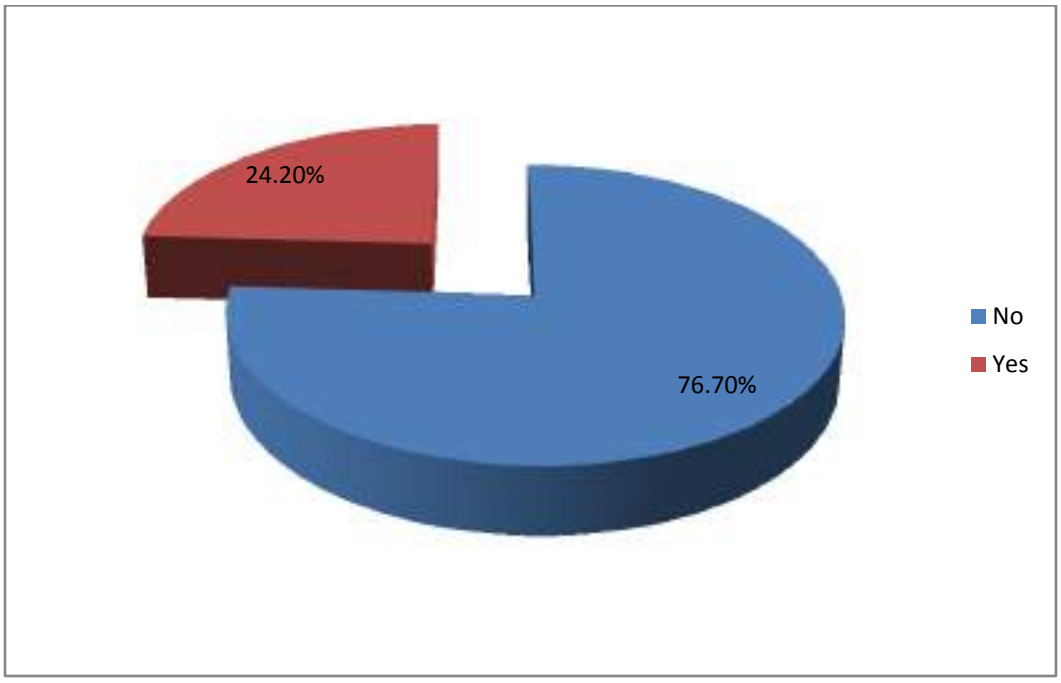


FIGURE 10: FIGURE SHOWING REQUIREMENT OF INVASIVE VENTILATION

TABLE 6- TABLE SHOWING REQUIREMENT OF INOTROPIC SUPPORT

Inotropes	No. of cases	Percentage
No	95	76.6%
Yes	29	23.4%
Total	124	100.0%

In Table 6, inotropes used for 29 (23.4%) cases of 124 subjects and there wasno need of any inotropes in 95 (76.6%) cases.

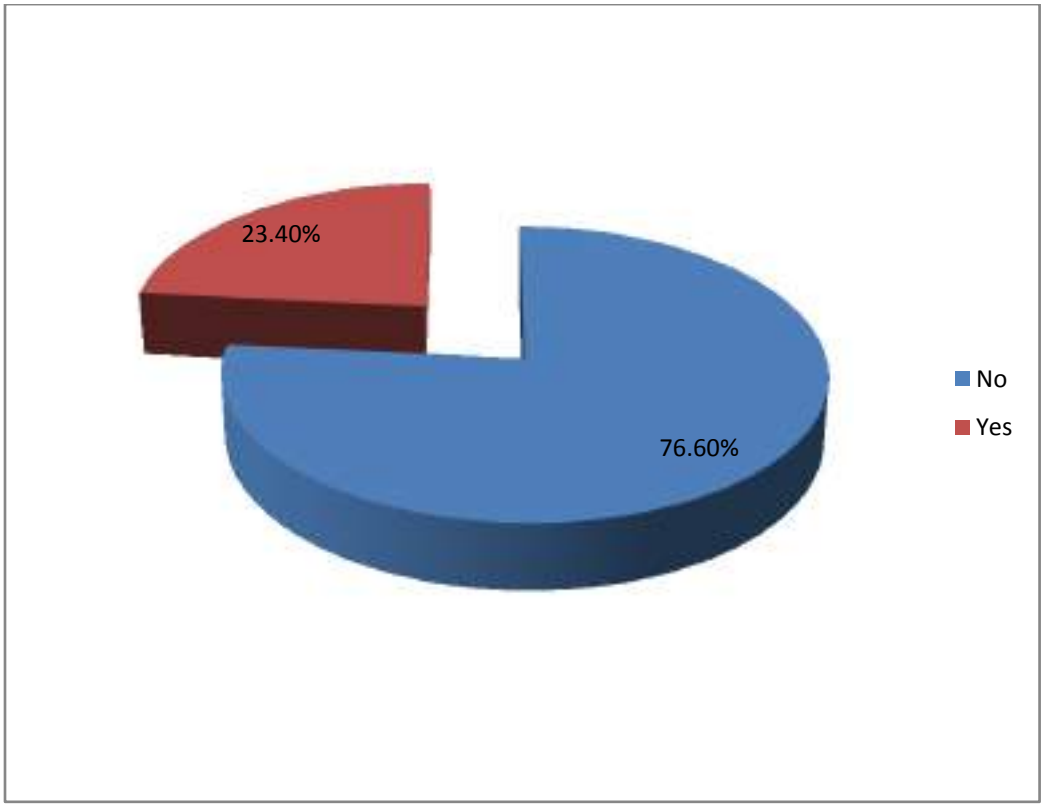


FIGURE 11: FIGURE SHOWING REQUIREMENT OF INOTROPIC SUPPORT

CURRENT PRACTICES OF ENTERAL NUTRITION IN CRITICAL ILL CHILDREN:

TABLE 7- TABLE SHOWING THE DAY OF INITIATION OF FEEDS

DAY OF STARTING FEED	No. of cases	Percentage
< 3	56	45.2%
3-7.0	42	33.9%
> 7	6	4.8%
NOT STARTED	20	16.1%
Total	124	100.0%

In Table 7, out of total enrolled PICU subjects (124), feed was started within 3 days of admission in 56 (45.2%) patients, feed was started within 3 to 7 days of admission in 42 (33.9%) patients, feed started after 7 days of admission in 6 (4.8%) patients only. In 20 (16.1%) patients, feed was not started due to various factors.

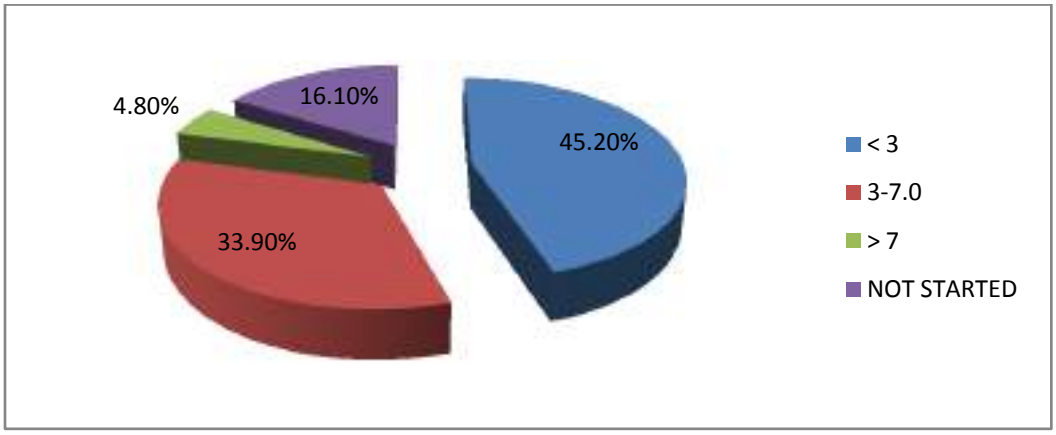


FIGURE 12: FIGURE SHOWING THE DAY OF INITIATION OF FEEDS

TABLE 8-TABLE SHOWING MODE OF FEEDING

MODE OF FEEDING	No. of cases	Percentage
Oral	38	36.5%
NG	61	58.7%
OG	5	4.8%
Total	104	100.0%

In Table 8, in PICU patients, feed was started in 104 (83.9%) subjects out of total enrolment of 124 subjects. Out of 104, 38 (36.5%) patients were given direct oral feeds. Nasogastric tube feeding was given in 61 (58.7%) subjects and only 5 (4.8%) subjects received oro-gastric tube feeding.

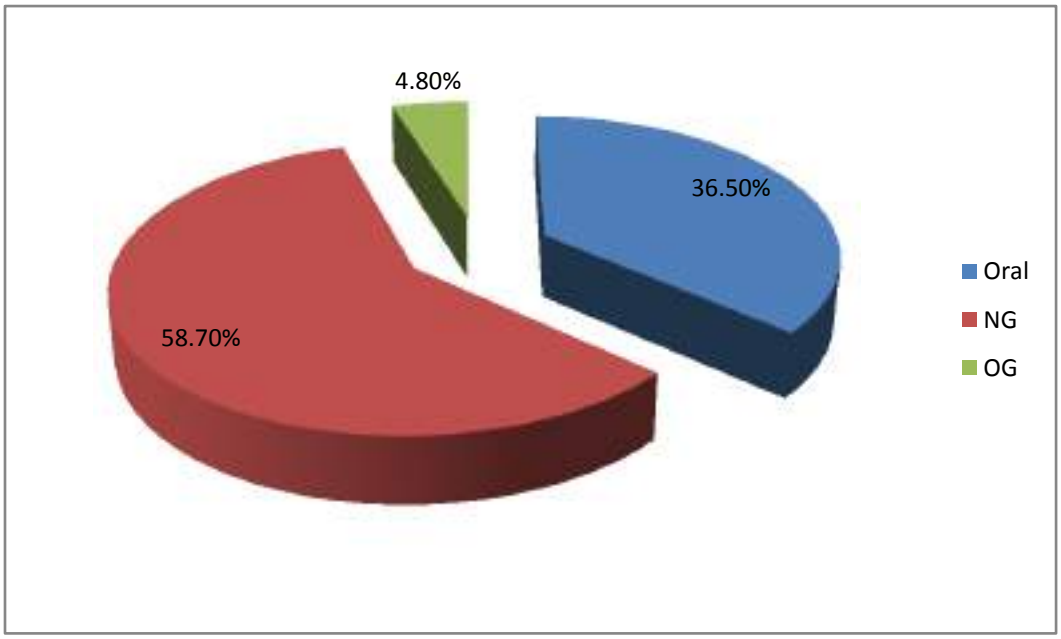


FIGURE 13: FIGURE SHOWING MODE OF FEEDING

TABLE 9-TABLE SHOWING DAY OF ACHIEVEMENT OF FULL FEEDS

Full Feed Achieved	No. of cases	Percentage
< 3 days	24	19.4%
3-7 days	24	19.4%
> 7 days	5	4.0%
Not achieved	71	57.3%
Total	124	100.0%

In Table 9, out of total 124 enrolled PICU subjects, full feed was not achieved in 71 (57.3%) patients and full feed was achieved in 53 (42.7%) patients in this study. Out of total patients, full feed was achieved within 3 days in 24 (19.4%) patients, within 3 to 7 days in 24 (19.4%) patients and after 7 days in 5 (4%) patients. Out of 53 patients in which full feed was achieved, achievement was delayed by more than 7 days in 5 (9.4%) patients only.

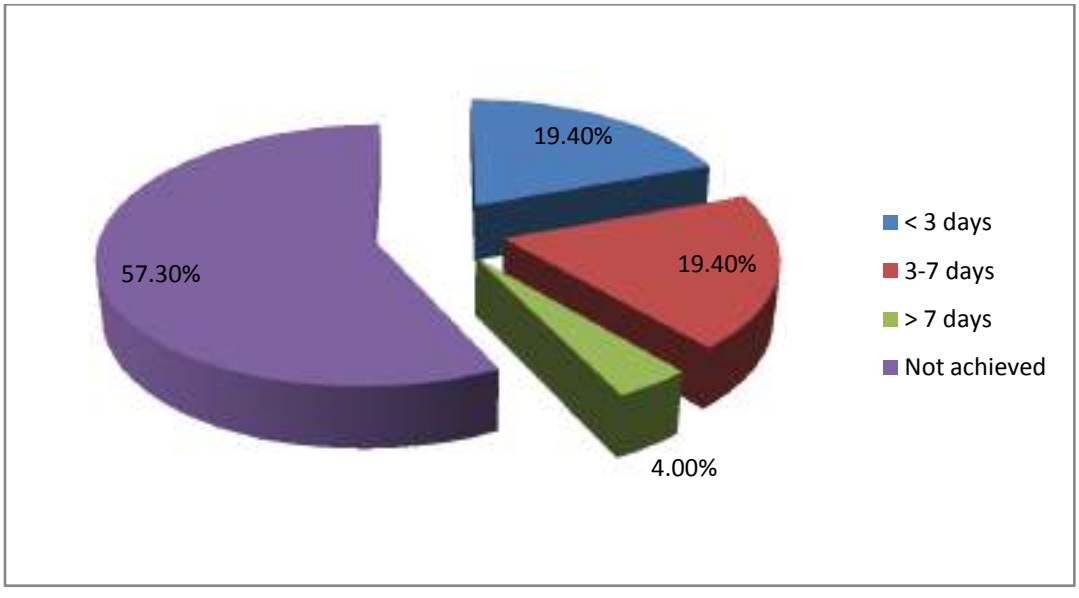


FIGURE 14: FIGURE SHOWING DAY OF ACHIEVEMENT OF FULL FEEDS

FACTORS AFFECTING ENTERAL NUTRITION:

TABLE 10-TABLE SHOWING COMPARISON OF DAY OF INITIATION OFFEEDS WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Day Of Starting Feed	< 3	39	73.6%	17	23.9%	56	0.0001
	3-7.0	13	24.5%	29	40.8%	42	
	> 7	1	1.9%	5	7.0%	6	
	Not Started	0	0.0%	20	28.2%	20	
Total		53	100.0%	71	100.0%	124	

In Table 10, out of 53 cases in which full feed was achieved, in 39 (73.6%) cases, feed was started within 3 days, in 13 (24.5%) cases, feed was started within 3 to 7 days and in only 1 (1.9%) case, feed was started after 7 days. Out of 71 cases in which we were not able to achieve full feed, in 17 (23.9%) cases, feed was started within 3 days, in 29 (40.8%) cases, feed was started within 3 to 7 days and in 5 (7%) cases, feed was started after 7 days. P value for association of day of starting feed was 0.0001.

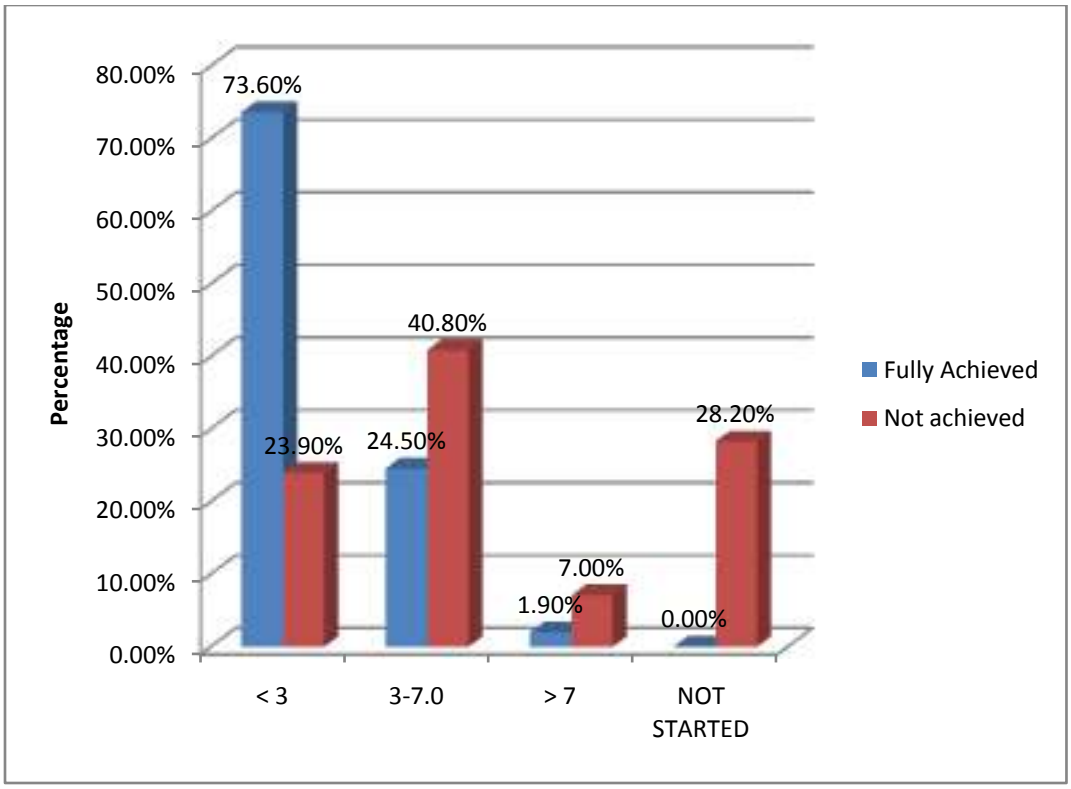


FIGURE15: FIGURE SHOWING COMPARISON OF DAY OF INITIATION OFFEEDS WITH ACHIEVEMENT OF FEEDS

TABLE 11-TABLE SHOWING COMPARISON OF MODE OF FEEDING WITHACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. Cases	%age		
Mode Of Feeding	Oral	28	52.8%	10	14.1%	38	0.001
	NG	24	45.3%	37	52.1%	61	
	OG	1	1.9%	4	5.6%	5	
Total		53	100.0%	51	71.8%	104	

In Table 11, direct oral feed was given in 28 (52.8%) cases out of 53 patients (total number of cases with full achievement of feed) and NG feed was given in24 (45.3%) cases followed by OG feed in 1 (1.9%) case. Direct oral feed was given in 10 (14.1%) cases out of 51 patients (total number of cases with no achievement of full feed) and NG feed was given in 37 (52.1%) cases followed by OG feed in 4 (5.6%) cases. P value for mode of feeding was 0.001.

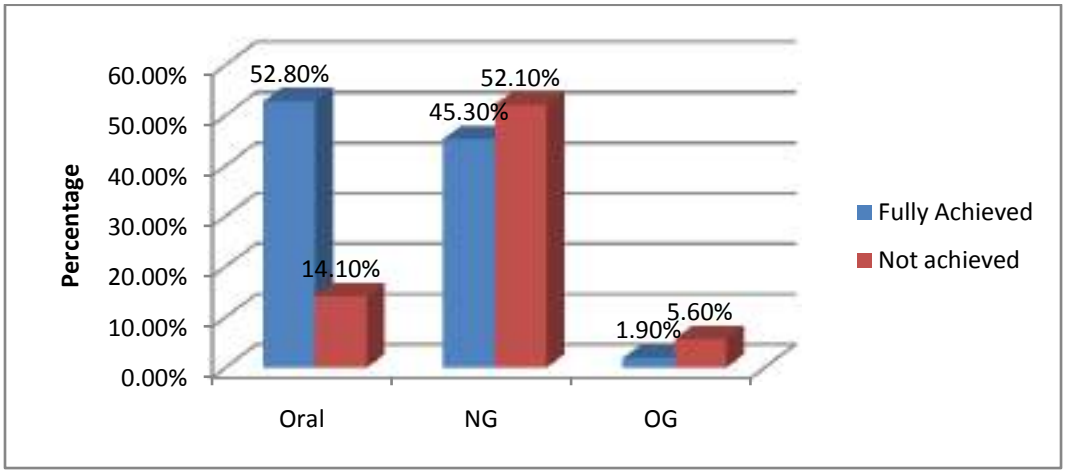


FIGURE16: SHOWING COMPARISON OF MODE OF FEEDING WITH ACHIEVEMENT OF FEEDS

TABLE 12– TABLE SHOWING ASSOCIATION OF VENTILATORY SUPPORT WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Ventilator	No	51	96.20%	43	60.60%	94	0.0001
	Yes	2	3.80%	28	39.40%	30	

In Table 12, 28 (39.4 percent) out of 71 cases were on ventilator support, in which fullfeed was not achieved and 2 (3.8 %) out of 53 cases were on ventilator support where we were able to achieve full feed. The association of ventilator support was statistically significant with p value of 0.0001 and was the most common factor in non attainment of full feed.

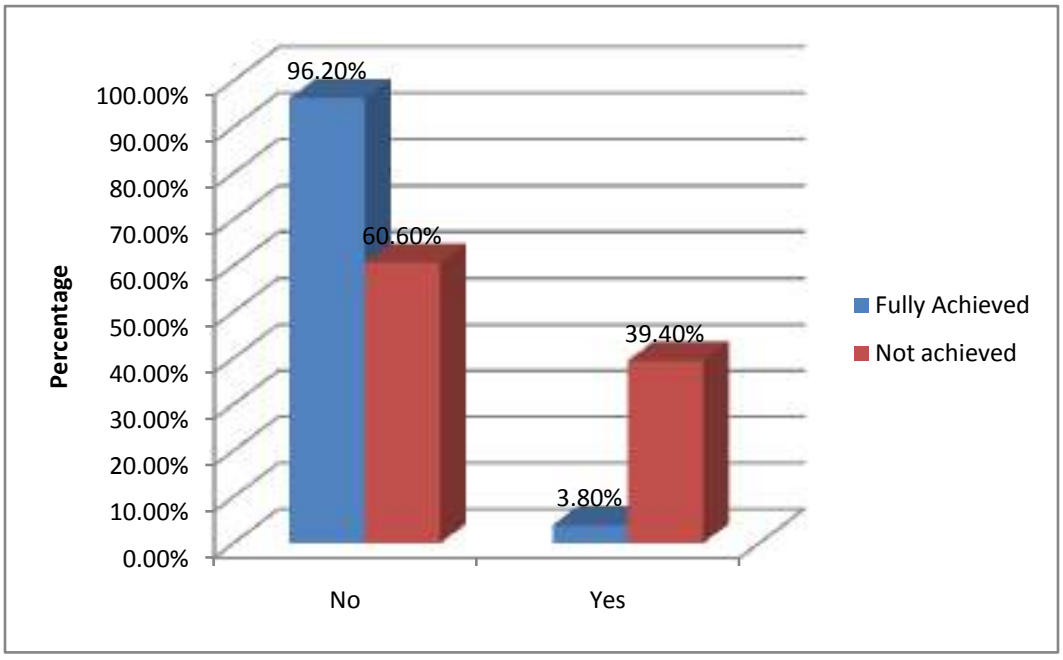


FIGURE17: FIGURE SHOWING ASSOCIATION OF VENTILATORY SUPPORT WITH ACHIEVEMENT OF FEEDS

TABLE 13– TABLE SHOWING ASSOCIATION OF SHOCK WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Shock	No	48	90.50%	47	66.10%	95	0.002
	Yes	5	9.50%	24	33.90%	29	

In Table 13, Shock was found to be associated in 24 cases (33.9 percent) in which full feed could not be achieved and was present in 5 (9.5%) cases wherefull feed was achieved. Association of shock with non attainment of feed was found to be statistically significant with p value of 0.002.

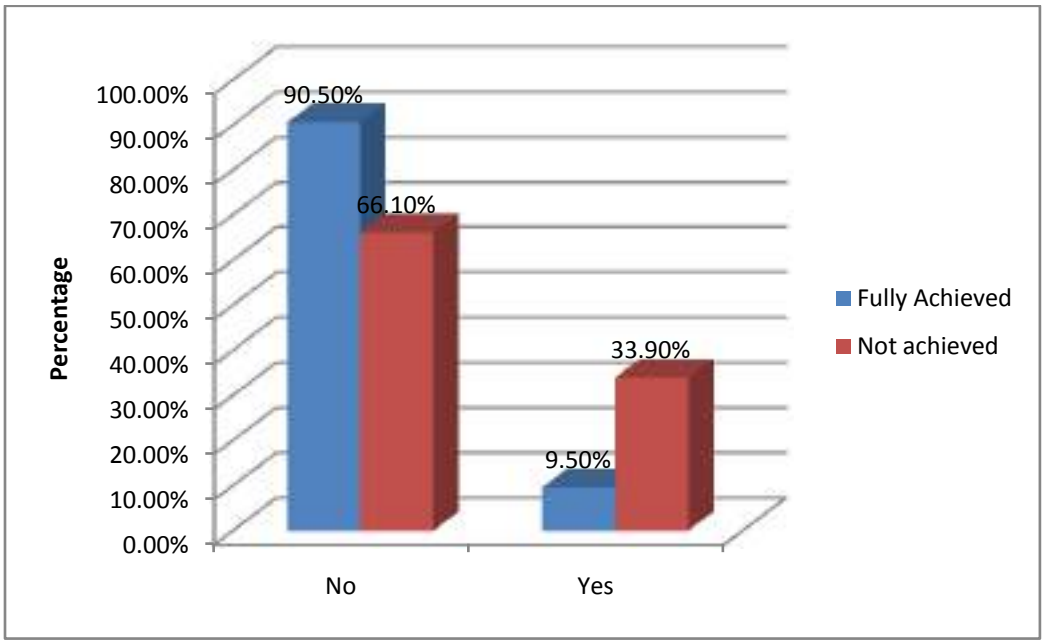


FIGURE18: FIGURE SHOWING ASSOCIATION OF SHOCK WITH ACHIEVEMENT OF FEEDS

TABLE 14 – TABLE SHOWING ASSOCIATION OF RESPIRATORY DISTRESSWITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Respiratory Distress	No	35	66.10%	50	70.40%	85	0.53
	Yes	18	33.90%	21	29.60%	39	

In Table 14, Respiratory distress, present in 21 (29.6%) cases where full feed was not achieved and 18 (33.9%) cases where full feed was achieved but the association of respiratory distress was not statistically significant p value of 0.530).

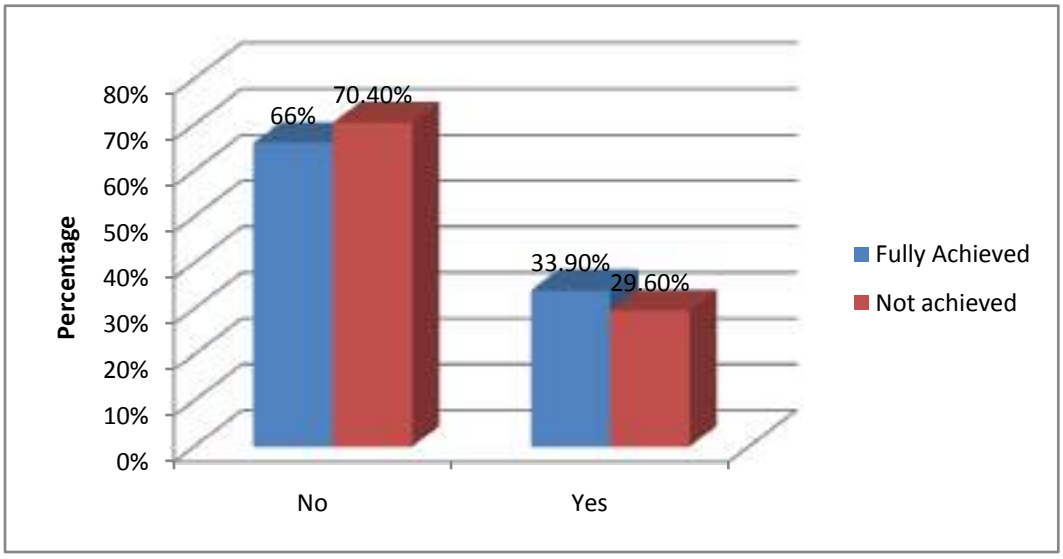


FIGURE 19: FIGURE SHOWING ASSOCIATION OF RESPIRATORY DISTRESS WITH ACHIEVEMENT OF FEEDS

TABLE 15–TABLE SHOWING ASSOCIATION OF ACUTE KIDNEY INJURY WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
AKI	No	52	98.10%	62	87.30%	114	0.02
	Yes	1	1.90%	9	12.70%	10	

In Table 15, AKI found to be present in 9 (12.7%) cases where full feed was not achieved and in only 1 (1.9 %) case where full feed was achieved. It was found that association of AKI with non attainment of full feed was statistically significant with p value of 0.020.

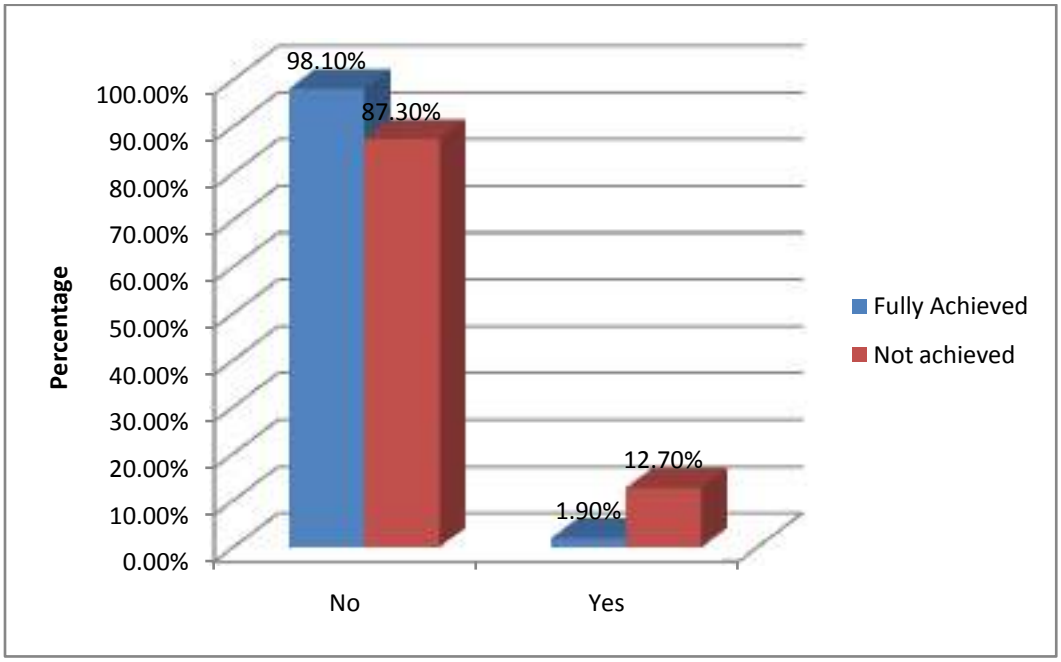


FIGURE 20: FIGURE SHOWING ASSOCIATION OF ACUTE KIDNEY INJURYWITH ACHIEVEMENT OF FEEDS

TABLE 16 – TABLE SHOWING ASSOCIATION OF DYSELECTROLYTEMIA WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved			
		No. of cases	%age	No. of cases	%age	Total	p-value
Dyselectrolytemias	No	45	84.90%	64	90.10%	109	0.63
	Yes	8	15.10%	7	9.90%	15	

In Table 16, dyselectrolytemia in 8 (15.1%) cases of achieved feed and 7 (9.9%) casesof not achieved feed with p value of 0.630.

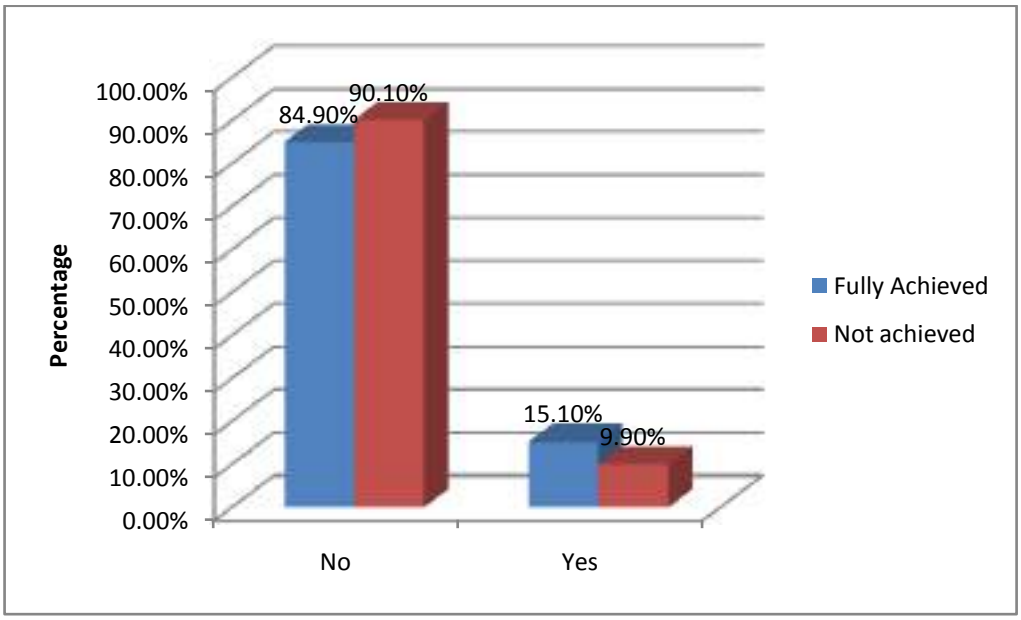


FIGURE 21: FIGURE SHOWING ASSOCIATION OF DYSELECTROLYTEMIA WITH ACHIEVEMENT OF FEEDS

TABLE 17–TABLE SHOWING ASSOCIATION OF SEIZURES WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Seizures	No	49	92.40%	65	91.50%	114	0.54
	Yes	4	7.60%	6	8.50%	10	

In Table 17, Seizures in 4 (7.6%) cases where full feed was achieved and in 6 (8.5%)cases where full feed was not achieved with p value of 0.540.

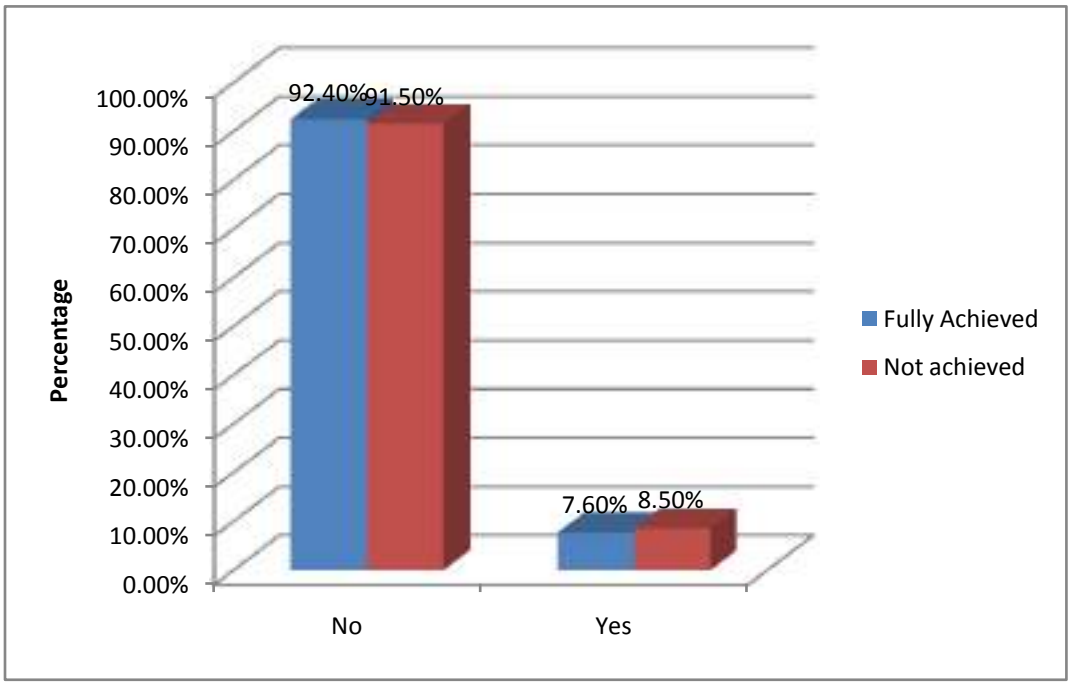


FIGURE 22: FIGURE SHOWING ASSOCIATION OF SEIZURES WITH ACHIEVEMENT OF FEEDS

TABLE 18 –TABLE SHOWING ASSOCIATION OF HEART FAILURE WITHACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved			
		No. of cases	%age	No. of cases	%age	Total	p-value
Heart Failure	No	51	96.20%	66	93.00 %	117	0.17
	Yes	2	3.77%	5	7.00%	7	

In Table 18, Heart Failure in 2 (3.77%) cases of achieved feed and 5 (7%) cases of feednot achieved with p value of 0.170.

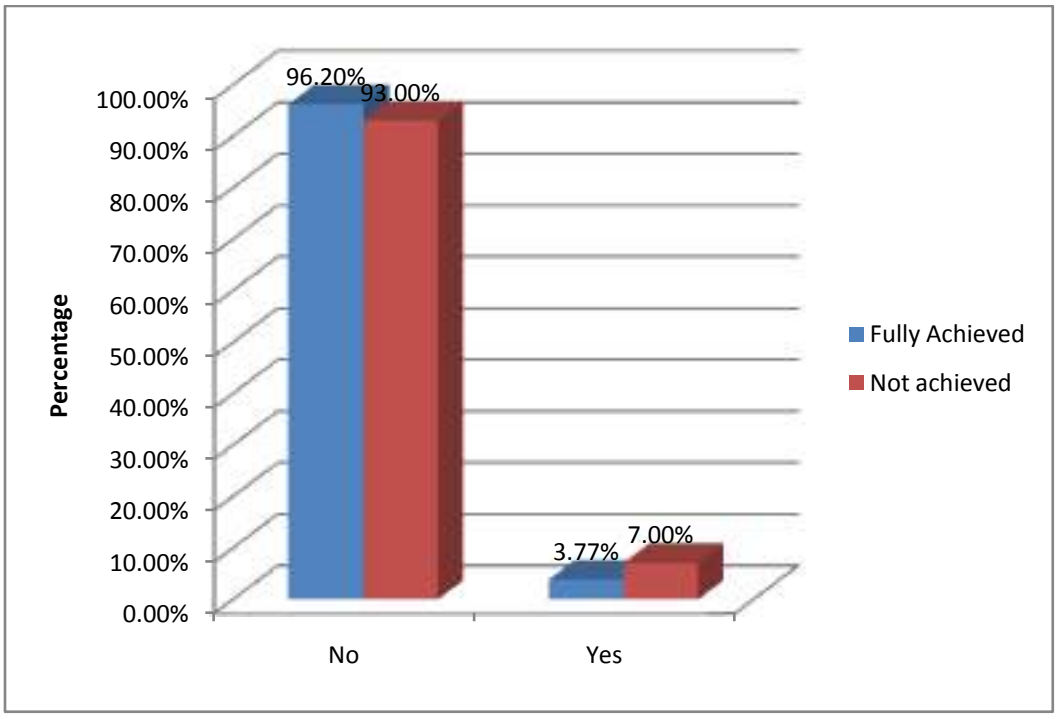


FIGURE 23: FIGURE SHOWING ASSOCIATION OF HEART FAILURE WITHACHIEVEMENT OF FEEDS

TABLE 19 –TABLE SHOWING ASSOCIATION OF GI BLEED WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
GI bleed	No	53	100.00%	67	94.40%	120	0.135
	Yes	0	0.00%	4	5.60%	4	

In Table 19, GI bleed was present in 4 (5.6%) cases (p value 0.135)

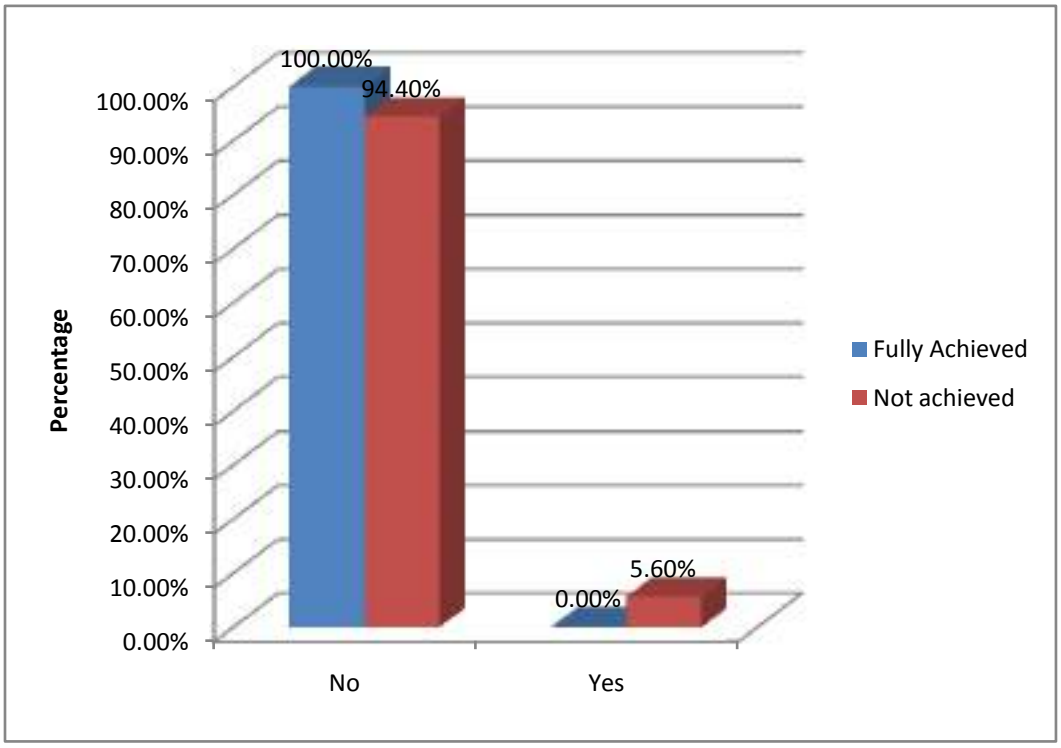


FIGURE 24: FIGURE SHOWING ASSOCIATION OF GI BLEED WITH ACHIEVEMENT OF FEEDS

TABLE 20–TABLE SHOWING ASSOCIATION OF SURGICAL CONDITIONS WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Surgery	No	45	84.90%	68	95.70%	113	0.786
	Yes	8	15.10%	3	4.30%	11	

In Table 20, 3 (4.3%) cases of not achieved feed underwent surgery with p value of 0.786.

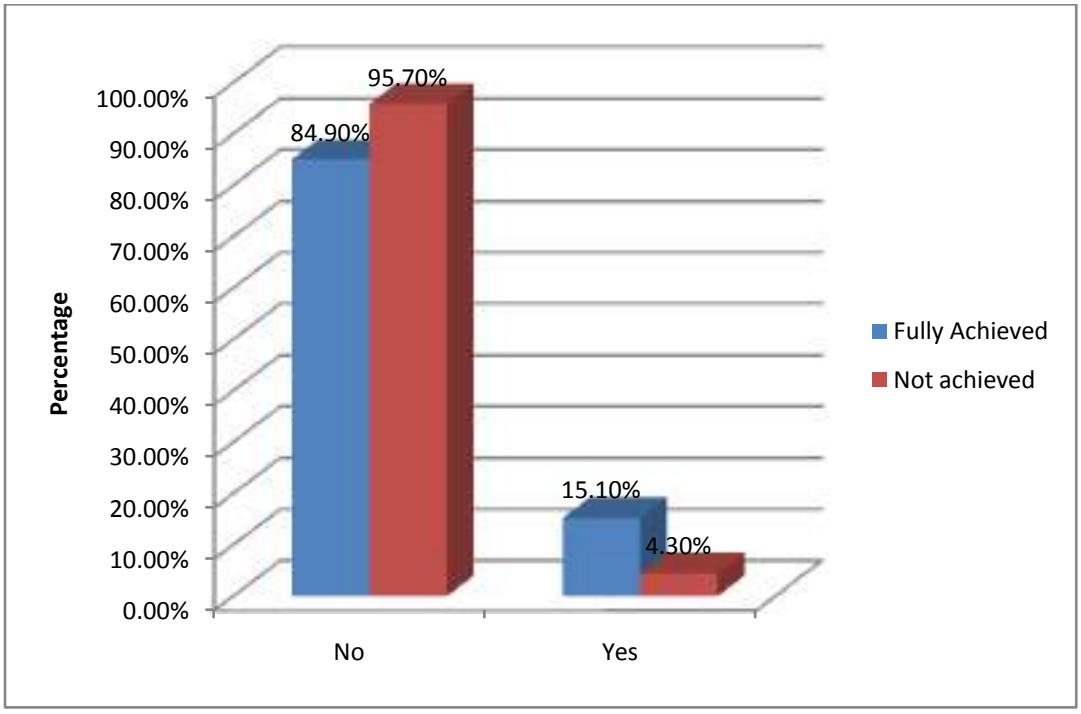


FIGURE 25: FIGURE SHOWING ASSOCIATION OF SURGICAL CONDITIONSWITH ACHIEVEMENT OF FEEDS

TABLE 21 –TABLE SHOWING ASSOCIATION OF ILEUS WITH ACHIEVEMENTOF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Ileus	No	53	100.00%	68	95.80%	121	0.26
	Yes	0	0.00%	3	4.20%	3	

In Table 21, Ileus was present in 3 (4.2%) cases (p value 0.260)

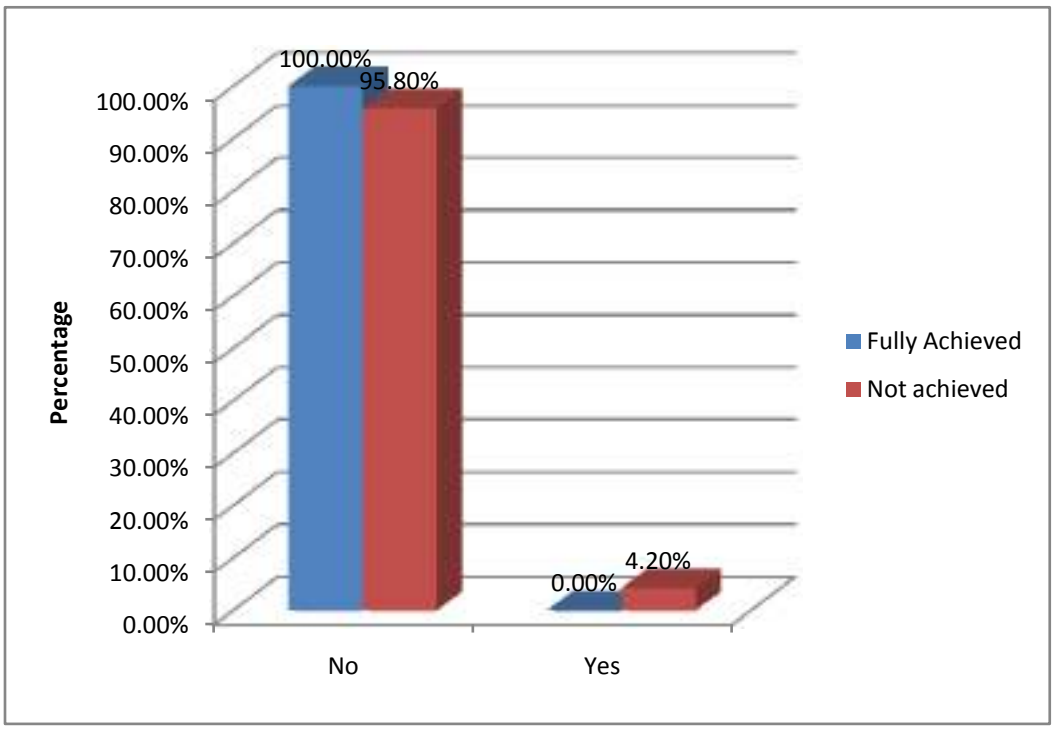


FIGURE 26: FIGURE SHOWING ASSOCIATION OF ILEUS WITH ACHIEVEMENT OF FEEDS

TABLE 22 –TABLE SHOWING ASSOCIATION OF IEM WITH ACHIEVEMENTOF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
IEM	No	53	100.00%	70	98.60%	123	0.386
	Yes	0	0.00%	1	1.40%	1	

In Table 22, IEM was present in 1 (1.4%) case (p value 0.386). There was no case of IEM where full feed was achieved.

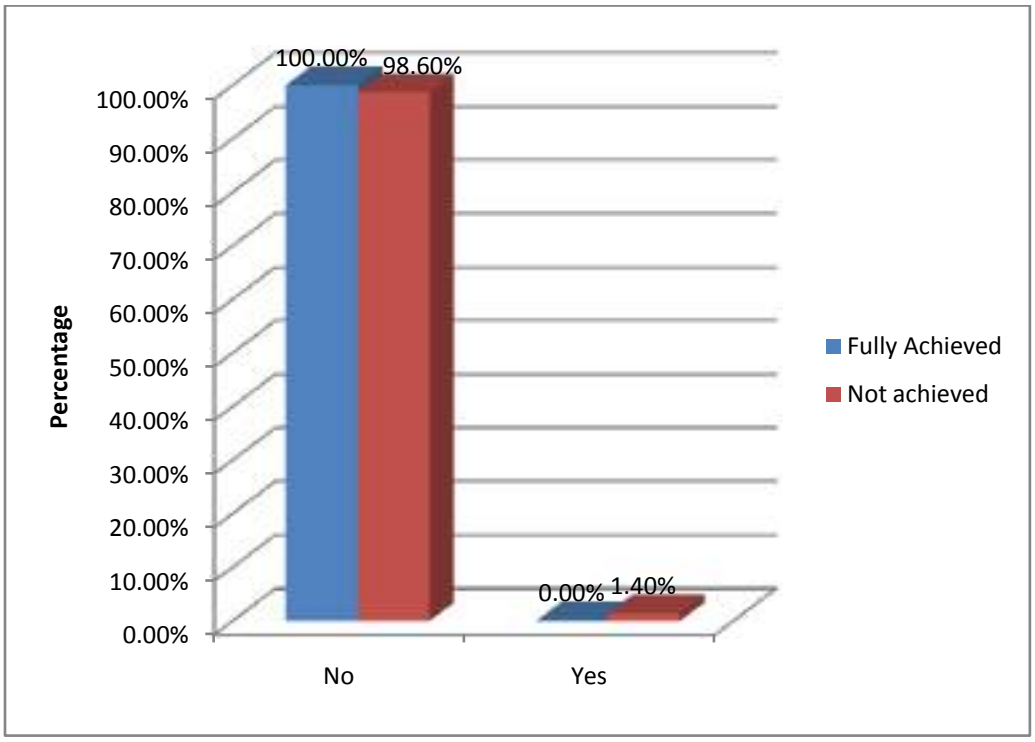


FIGURE 27: FIGURE SHOWING ASSOCIATION OF IEM WITH ACHIEVEMENTOF FEEDS

TABLE 23 – TABLE SHOWING ASSOCIATION OF HEPATIC ENCEPHALOPATHY WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of Cases	%age		
Hepatic Encephalopathy	No	53	100.00%	70	98.60 %	123	0.386
	Yes	0	0.00%	1	1.40%	1	

In Table 23, Hepatic Encephalopathy was present in 1 (1.4%) case (p value 0.386). There was no case of hepatic encephalopathy where full feed was achieved.

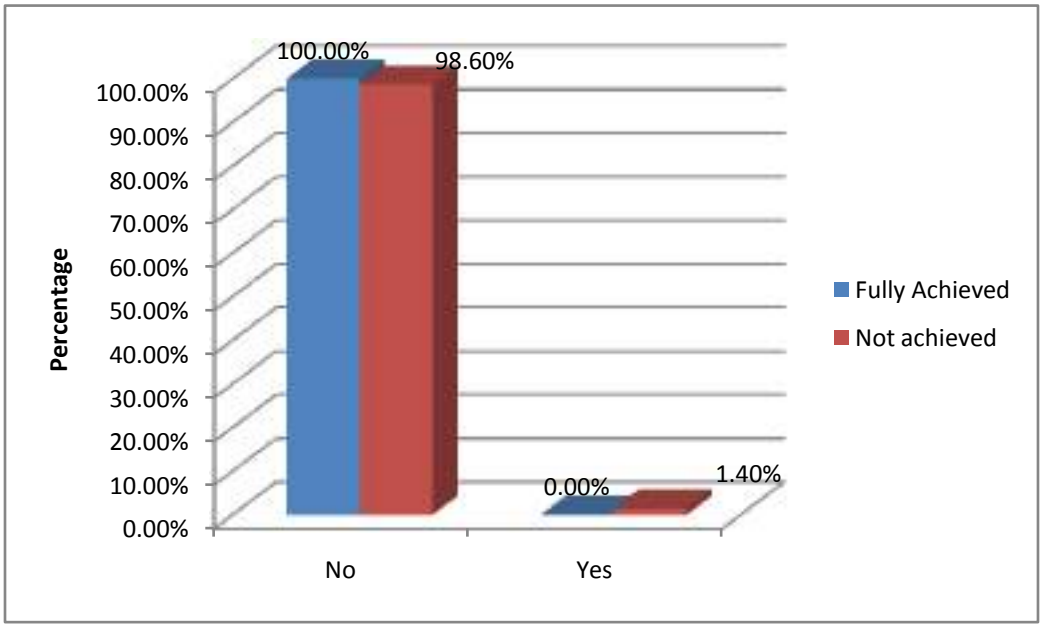


FIGURE 28: FIGURE SHOWING ASSOCIATION OF HEPATIC ENCEPHALOPATHY WITH ACHIEVEMENT OF FEEDS

TABLE 24–TABLE SHOWING ASSOCIATION OF FEED ASPIRATE WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
Aspirate	No	53	100.00%	70	98.60%	123	0.386
	Yes	0	0.00%	1	1.40%	1	

In Table 24, feed aspirate was present in 1 (1.4%) case (p value 0.386). There wasno case of feed aspirate where full feed was achieved.

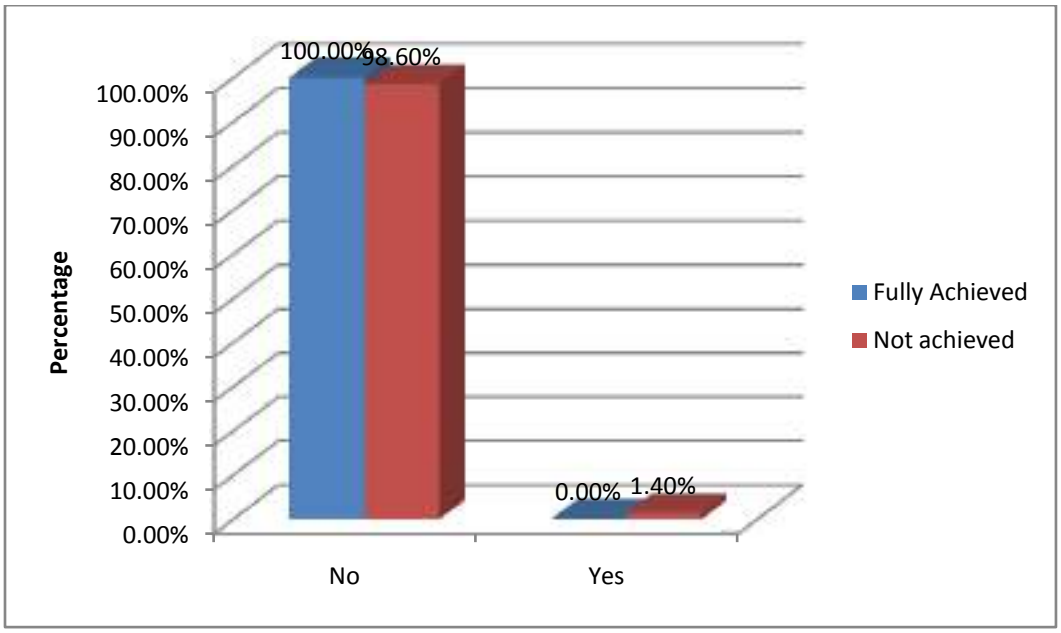


FIGURE 29: FIGURE SHOWING ASSOCIATION OF FEED ASPIRATE WITH ACHIEVEMENT OF FEEDS

TABLE 25- TABLE SHOWING SUMMARY OF THE VARIOUS FACTORSAFFECTING ENTERAL NUTRITION

	Feed	Fully Achieved		Not achieved		Total	p-value
		No. of cases	%age	No. of cases	%age		
AKI	No	52	98.1%	62	87.3%	114	0.020
	Yes	1	1.9%	9	12.7%	10	
Aspirate	No	53	100.0%	70	98.6%	123	0.386
	Yes	0	0.0%	1	1.4%	1	
Shock	No	48	90.5%	47	66.1%	95	0.002
	Yes	5	9.5%	24	33.9%	29	
Ventilator	No	51	96.2%	43	60.6%	94	0.0001
	Yes	2	3.8%	28	39.4%	30	
Hepatic Encephalopathy	No	53	100.0%	70	98.6%	123	0.386
	Yes	0	0.0%	1	1.4%	1	
Respiratory Distress	No	35	66%	50	70.4%	85	0.530
	Yes	18	33.9%	21	29.6%	39	
Seizures	No	49	92.4%	65	91.5%	114	0.540
	Yes	4	7.6%	6	8.5%	10	
Heart Failure	No	51	96.2%	66	93.0%	117	0.170
	Yes	2	3.77%	5	7.0%	7	
Dyselectrolytemias	No	45	84.9%	64	90.1%	109	0.630
	Yes	8	15.1%	7	9.9%	15	
GI bleed	No	53	100.0%	67	94.4%	120	0.135
	Yes	0	0.0%	4	5.6%	4	
Ileus	No	53	100.0%	68	95.8%	121	0.260
	Yes	0	0.0%	3	4.2%	3	
Burns	No	53	100.0%	70	98.6%	123	0.386
	Yes	0	0.0%	1	1.4%	1	
IEM	No	53	100.0%	70	98.6%	123	0.386
	Yes	0	0.0%	1	1.4%	1	
Surgery	No	45	84.9%	68	95.7%	113	
	Yes	8	15.1%	3	4.3%	11	
Total		53	100.0%	71	100.0%	124	0.786

Summary of factors affecting enteral nutrition with respect to achievement of full feed

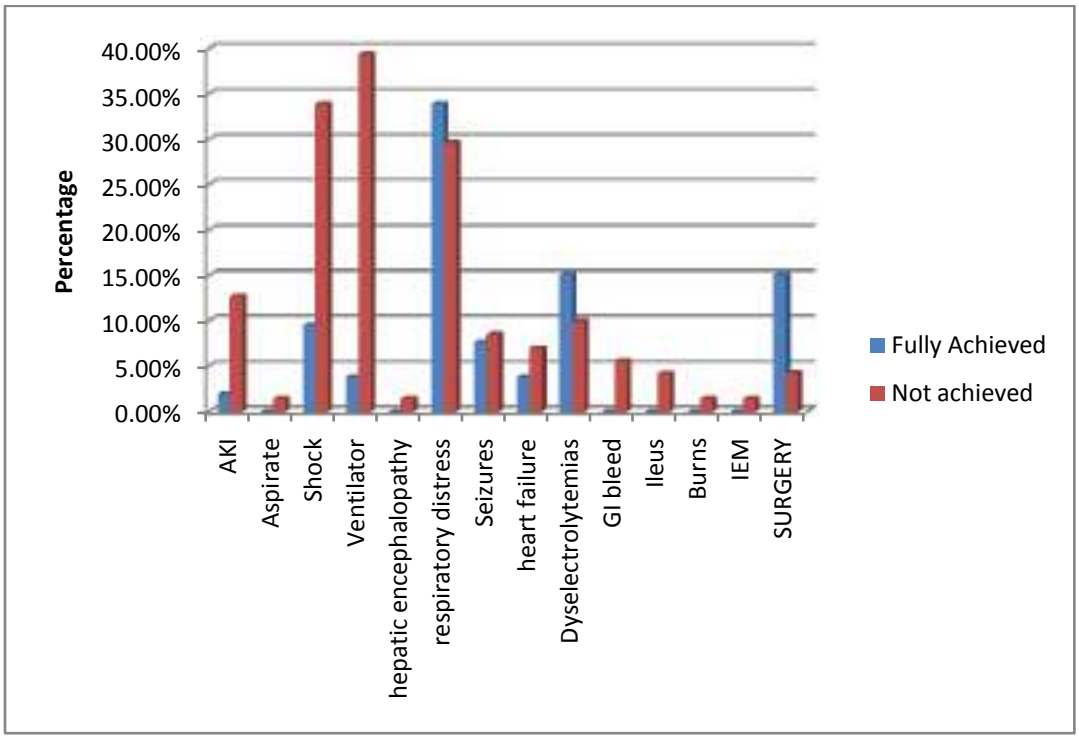


FIGURE 30: FIGURE SHOWING SUMMARY OF THE VARIOUS FACTORS AFFECTING ENTERAL NUTRITION

TABLE 26-TABLE SHOWING OUTCOME OF PICU PATIENTS

Outcome	No. of cases	Percentage
DISCHARGED	95	76.6%
DIED	14	11.3%
DAMA	15	12.1%
Total	124	100.0%

In Table 26, as per outcome of study, 95 (76.6%) cases were discharged, 14 (11.3%) cases died and 15 (12.1%) cases have discharged against medical advice.

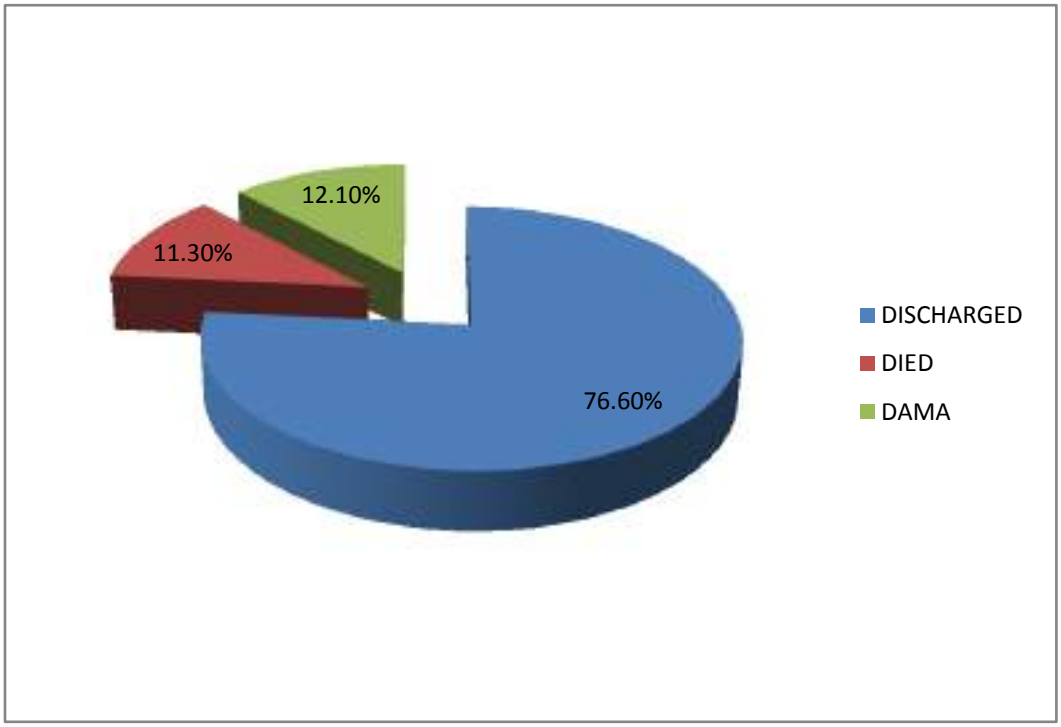


FIGURE 31: FIGURE SHOWING OUTCOME OF PICU PATIENTS

TABLE 27-TABLE SHOWING COMPARISON OF AGE GROUP WITH OUTCOME

		Outcome						Total	p-value
		Discharge	Discharge (%)	Death	Death (%)	DAMA	DAMA (%)		
AGE GROUP	<5yr	42	44.20%	4	28.60%	7	46.70%	53	0.058
	5-10yr	22	23.20%	8	57.10%	6	40.00%	36	
	>10yr	31	32.60%	2	14.30%	2	13.30%	35	
Total		95	100.00%	14	100.00%	15	100.00%	124	

In Table 27, out of 95 discharged patients, 42 (44.2%) were below the age of 5years, 22 (23.2%) were from the age group of 5 to 10 years and 31 (32.6%) were above the age of 10 years. Out of 14 deaths, 4 (28.6%) were below the age of 5 years, 8 (57.1%) were from 5 to 10 years age group and 2 (14.3%) were above 10 years. Out of 15 cases of DAMA, 7 (46.7%) were below 5 years, 6 (40%) were 5 to 10 years and 2 (13.3%) were above 10 years. P value of association of age groups with outcome was 0.058.

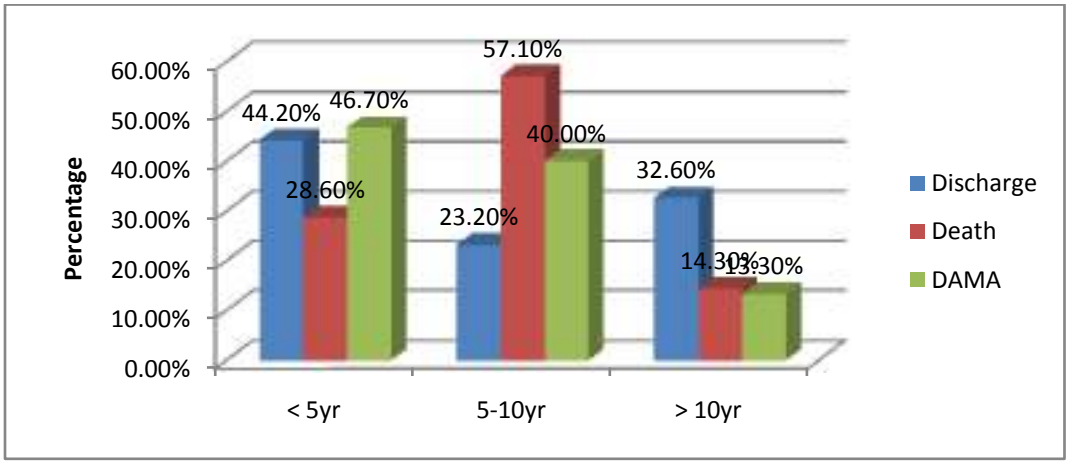


FIGURE 32: FIGURE SHOWING COMPARISON OF AGE GROUP WITH OUTCOME

TABLE 28-TABLE SHOWING COMPARISON OF GENDER WITH OUTCOME

		Outcome						Total	p-value
		Discharge	Discharge (%)	Death	Death (%)	DAMA	DAMA (%)		
Sex	Female	26	27.40%	6	42.90%	5	33.30%	37	0.473
	Male	69	72.60%	8	57.10%	10	66.70%	87	
Total		95	100.00%	14	100.00%	15	100.00%	124	

In Table 28, 69 (72.6%) cases of discharged were males and 26 (27.4%) cases were females. Out of 14 deaths, females were 6 (42.9%) and males were 8 (57.1%). 5 (33.3%) females and 10 (66.7%) males were discharged against medical advice. P value of association of sex with outcome was 0.473.

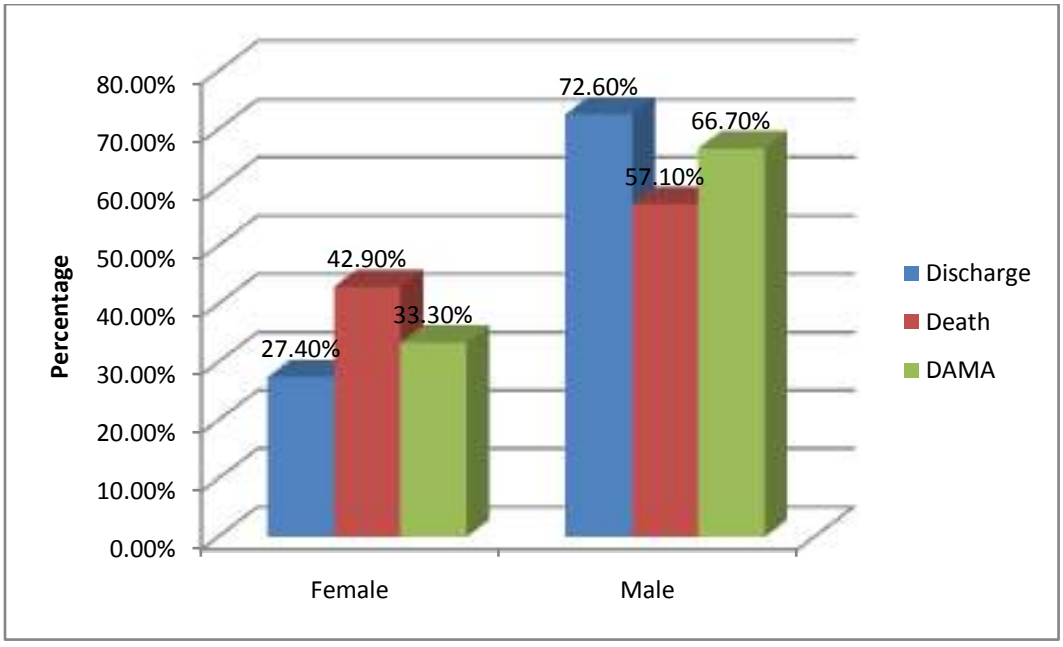


FIGURE 33: FIGURE SHOWING COMPARISON OF GENDER WITH OUTCOME

TABLE 29-TABLE SHOWING INDICATION OF PICU ADMISSION WITH OUTCOME

		Outcome						Total	p-value
		Discharge	Discharge (%)	Death	Death (%)	DAMA	DAMA (%)		
Indication of PICU Admission	AKI	0	0.00%	1	7.10%	0	0.00%	1	0.003
	Altered sensorium	14	14.70%	0	0.00%	3	20.00%	17	
	Electrolyte abnormality	4	4.20%	0	0.00%	0	0.00%	4	
	Observation	12	12.60%	0	0.00%	1	6.70%	13	
	Others	10	10.50%	0	0.00%	1	6.70%	11	
	Persistent bleeding	2	2.10%	1	7.10%	0	0.00%	3	
	Recurrent seizures	4	4.20%	0	0.00%	0	0.00%	4	
	Resp. distress	33	34.70%	2	14.30%	4	26.70%	39	
	Resp. failure	6	6.30%	5	35.70%	5	33.30%	16	
	Shock	9	9.50%	5	35.70%	1	6.70%	15	
	Tachycardia	1	1.10%	0	0.00%	0	0.00%	1	
Total		95	100.00%	14	100.00%	15	100.00%	124	

In Table 29, p value of association of indication of PICU admission with outcome was 0.003. Out of 95 discharged patients, 14 (14.7%) admitted with altered sensorium, 4 (4.2%) with electrolyte abnormality, 12 (12.6%) for observation, 10 (10.5%) with non-specified indications, 2 (2.1%) with persistent bleeding, 4 (4.2%) with recurrent seizures, 33 (34.7%) with respiratory distress, 6 (6.3%) with respiratory failure, 9 (9.5%) with shock and 1 (1.1%) with tachycardia. Out of 14 deaths, 1 (7.1%) admitted with AKI, 1 (7.1%) with persistent bleeding, 2 (14.3%) with respiratory distress, 5 (35.7%) with respiratory failure, 5 (35.7%) with shock. Out of 15 DAMA patients, 3 (20%) admitted with altered sensorium, 1 (6.7%) for observation, 1 (6.7%) with non-specified indications, 4 (26.7%) with respiratory distress, 5 (33.3%) with respiratory failure, 1 (6.7%) with shock.

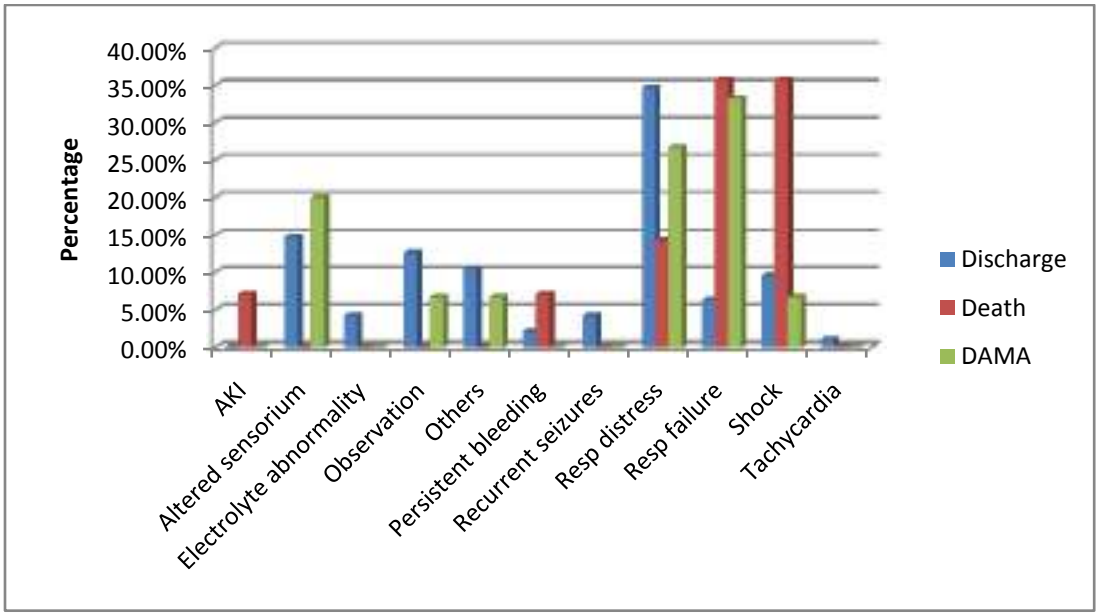


FIGURE 34: FIGURE SHOWING INDICATION OF PICU ADMISSION WITH OUTCOME

TABLE 30- TABLE SHOWING EFFECT OF ACHIEVEMENT OF FEEDS ON OUTCOME

	Feed	Fully Achieved		Not achieved		Total	p-value
		Fully Achieved	Fully Achieved	Not achieved	Not achieved		
Outcome	DISCHARGED	53	100.00%	42	59.20%	95	0.0001
	DIED	0	0.00%	14	19.70%	14	
	DAMA	0	0.00%	15	21.10%	15	
Total		53	100.00%	71	100.00%	124	

In Table 30, p value of association of enteral nutrition with outcome was 0.0001. Out of 53 cases where full feed was achieved, all 53 (100%) cases were discharged. Out of 71 cases where full feed was not achieved, 42 (59.2%) cases were discharged, 14 (19.7%) were deaths and 15 (21.1%) were dischargedagainst medical advice.

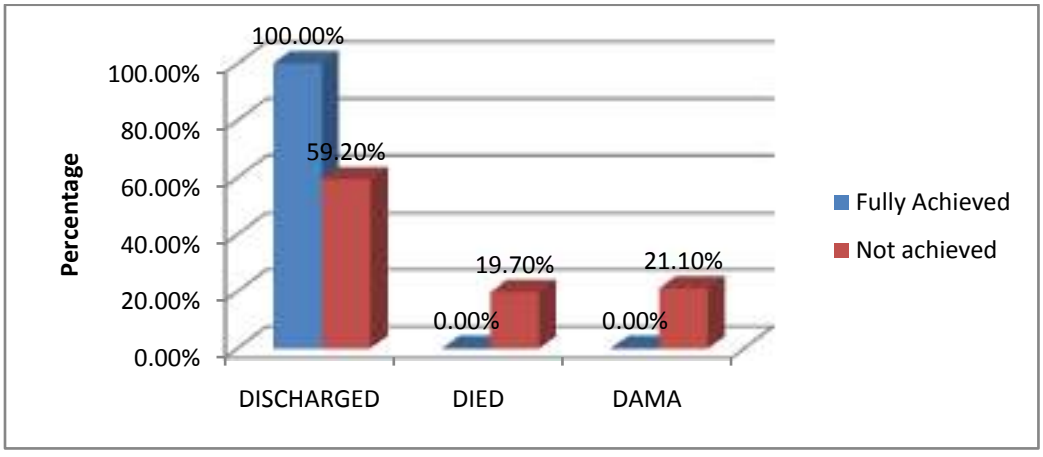


FIGURE 35: FIGURE SHOWING EFFECT OF ACHIEVEMENT OF FEEDS ON OUTCOME

TABLE 31-TABLE SHOWING RELATION OF PRISM SCORE WITH ACHIEVEMENT OF FEEDS

	Feed	Fully Achieved		Not achieved		Total	Chi-square value	p-value
		No. of cases	% age	No. of cases	% age			
PRISM score	< 9	47	88.7%	46	64.8%	93	9.396	0.009
	10-19.0	6	11.3%	24	33.8%	30		
	20-29	0	0.0%	1	1.4%	1		
Total		53	100.0%	71	100.0%	124		

In Table 31, out of 124 cases 71 cases were not able to achieve full feeds of which 46(64.8%) had PRISM score of less than 9 , 24 cases (33.8%) had PRISMscore of 10- 19 and 1 case(1.4%) had PRISM score of 20 -29. out of 124 cases feed was fully achieved in 53 cases of which 47 cases (88.7%) had PRISM score of less than 9. the association of PRISM score and full achievement of feeds was found to be statistically significant in our study with a p value of 0.009.

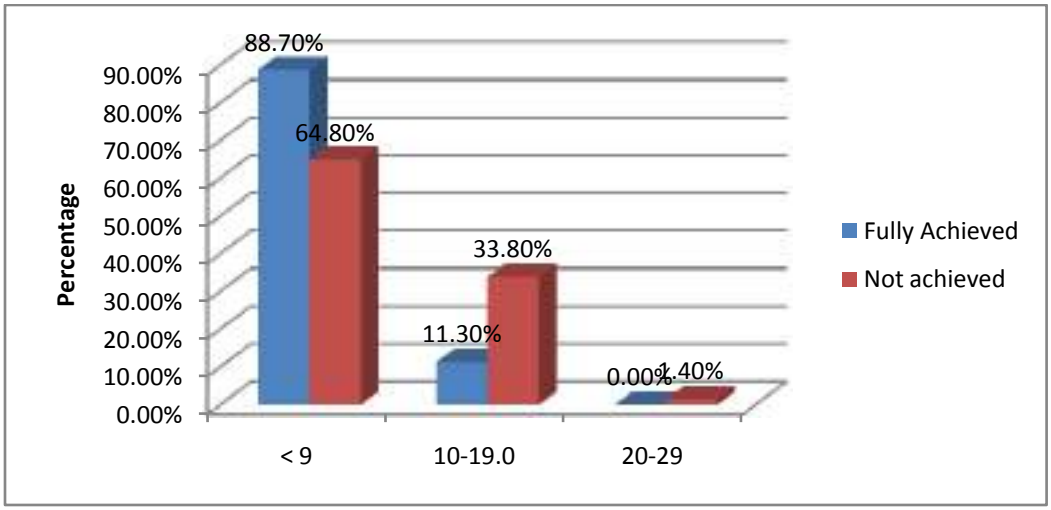


FIGURE 36: FIGURE SHOWING RELATION OF PRISM SCORE WITH ACHIEVEMENT OF FEEDS

DISCUSSION

There has been ample data on the nutrition practices in flourishing intensive care units in adults in our country and worldwide. The outcome of the patient in terms of establishment of full feeds is becoming the cornerstone of measuring the effectiveness of PICU management for evaluating hospital care. Our study was conducted in the PICU in the inpatient Pediatric department on children from 1 -18 years of age from the Pediatric ICU of Dayanand Medical College and Hospital, Ludhiana after a minimum stay of 24 hours. It was carried out with help of multidisciplinary team approach involving the Nutrition specialist- Chief Dietician, exemplary nursing staff of pediatric ICU.

AGE DISTRIBUTION

Out of total enrolled PICU cases, 53 (42.7%) patients were below the age of 5 years followed by 36 (29%) cases belonged to the age group of 5 to 10 years and 35 (28.2%) patients were above the age of 10 years.

GENDER DISTRIBUTION

- As per our study, out of total 124 enrolled PICU subjects, 87 (70.2%) weremales and only 37 (29.8%) were females.
- Mean age of total population of the study was 7.13 years.
- Mean weight of enrolled cases was 25.98 kg and mean height was 115.57cms.
- Mean duration of stay was 5.58 days.

INDICATIONS OF HOSPITAL ADMISSION

In our total PICU admissions over the time period of conducted study, most common indication of admission was respiratory distress which was present in 39 (31.5%) patients. Second most common indication was altered sensorium found in 17 (13.7%) cases followed by respiratory failure in 16 (12.9%) cases and shock in 15 (12.1%) cases.

Other indications were, unspecified in 11 (8.9%) patients followed by recurrent seizures and electrolyte abnormalities in 4 (3.2%) patients each, persistent bleeding in 3 (2.4%) patients, AKI and tachycardia in 1 (0.8%) patient each.

In our study of total 124 PICU admissions, 94 (76.7%) patients did not have the requirement of mechanical ventilation and only 30 (24.2%) patients needed mechanical ventilator. 95 (76.6%) of total 124 PICU admissions did not require any of inotropic support and inotropes were required only in 29 (23.4%) of enrolled admissions.

CURRENT PRACTICES OF ENTERAL NUTRITION IN CRITICAL ILL CHILDREN:

Day of Initiation of feeds -

In this study that out of total enrolled PICU subjects (124), feed was started within 3 days of admission in 56 (45.2%) patients, feed was started within 3 to 7 days of admission in 42 (33.9%) patients, feed started after 7 days of admission in 6 (4.8%) patients only. In 20 (16.1%) patients, feed was not started due to various factors. In a study conducted by LyvonneTume et al., enteral feed was started within 6 hours of admission in 47% of PICU patients. [33] Joffe A et al. found no difference of outcome between comparison of two groups including start of feeds within 24 hours of PICU admission and after 48 hours of admission. In a 2009, joint clinical guideline statement, the Society for Parenteral and Enteral Nutrition (A.S.P.E.N.) and the Society of Critical Care Medicine endorsed the use of EN in the initial 24 to 72 hours of admission in critically ill adults. [70]

Mode of Feeding-

As per our study conducted in PICU patients, feed was started in 104 (83.9%) subjects out of total enrolment of 124 subjects. Out of 104, 38 (36.5%) patients were given direct oral feeds. Nasogastric tube feeding was given in 61 (58.7%) subjects and only 5 (4.8%) subjects received oro-gastric tube feeding. Mara et al in its study found majority of patients enrolled were fed by nasogastric tube. [48]

Day of Achievement of full feeds-

Out of total enrolled PICU patients, full feed was not achieved in 71 (57.3%) patients and full feed was achieved in 53 (42.7%) patients in this study. Out of total patients, full feed was achieved within 3 days in 24 (19.4%) patients, within 3 to 7 days in 24 (19.4%) patients and after 7 days in 5 (4%) patients. Out of 53 patients in whom full feed was achieved, achievement was delayed by more than 7 days in 5 (9.4%) patients only.

FACTORS WHICH AFFECTED ESTABLISHMENT OF FULL FEEDS-

Multiple factors were found to be involved in view of not achieving full feeds.

Day of starting feeds had significant association with achievement of feeds with p value of 0.0001.After early initiation of enteral nutrition; we were able to achieve full feeds in more number of cases. Out of 53 patients, in which full feeds was achieved in 39 (73.6 percent) cases, feeds was started within 3 days. In 13 (24.5 percent) cases, feed was started within 3-7 days and only in 1 (1.9 percent), feed was started after 7 days. Out of 71 cases, in which we were not able to achieve full feeds in17 (23.9 percent) cases, feed was started within 3 days, in 29 (40.8 percent) cases, feed was started within 3-7 days, in 5 cases (7 percent), and feed was started after 7 days.

Mode of feeding was found to have significant association with establishment of feeds with p value of 0.001 as after starting direct oral feeds, establishment of full feed was better. Direct oral feed was given in 28 cases (52.8 percent) out of 53 patients (total no. of cases with full achievement of feeds) and NG feeds was given in 24 (45.3 percent) cases followed by OG feed in 1 (1.9 percent) case. Direct Oral feed was given in 10 cases (14.1 percent) out of 51 patients (total no. of cases with no achievement of full feeds) and NG feeds was given in 37 (52.1 percent) cases followed by OG feed in 4 (5.6 percent) cases.

Factors evaluated in this study which were hindrance in nutrition practices. 28 (39.4 percent) out of 71 cases were on ventilator support, in which full feed was not achieved and 2 (3.8 %) out of 53 cases were on ventilator support where we were able to achieve full feed. The association of ventilator support was statistically significant with p value of 0.0001 and was the most common factor in non attainment of full feed. Canarie et al studied in 6 medical-surgical PICUs in a retrospective cross-sectional study in children < 21 years old admitted to the PICU and found ventilation was most strongly associated with delay EN. [71]

Secondly, Shock was found to be associated in 24 cases (33.9 percent) in which full feed could not be achieved and was present in 5 (9.5 %) cases where full feed was achieved. Association of shock with non attainment of feed was found to be statistically significant with p value of 0.002. In a study conducted by Panchal et al, 339 patients of shock were enrolled. In 55 percent cases feeds were initiated and 45 percent feeds were not initiated. [70]

Third common factor was respiratory distress, present in 21 (29.6%) cases where full feed was not achieved and 18 (33.9%) cases where full feed was achieved but the association of respiratory distress was not statistically significant (p value of 0.530). Canarie et al studied in 6

medical-surgical PICUs in a retrospective cross-sectional study in children < 21 years old admitted to the PICU and found respiratory distress as respiratory support strongly associated with delay EN. [71]

Fourth common factor was AKI found to be present in 9 (12.7%) cases where full feed was not achieved and in only 1 (1.9 %) case where full feed was achieved .It was found that association of AKI with non attainment of full feed was statistically significant with p value of 0.020. Sabatino A et al and Kyle UG et al in their studies have demonstrated significant lack of provision of enteral nutrition in cases of AKI. [72,73] Zappitelli M et al. in their prospective study found that there is need of modification of feeds in terms of high carbohydrates and restricted protein intake in patients of AKI requiring continuous renal replacement therapy.[74]

Other statistically non-significant factors were Seizures in 4 (7.6%) cases where full feed was achieved and in 6 (8.5%) cases where full feed was not achieved with p value of 0.540, heart failure in 2 (3.77%) cases of achieved feed and 5 (7%) cases of feed not achieved with p value of 0.170, dyselectrolytemia in 8 (15.1%) cases of achieved feed and 7 (9.9%) cases of not achieved feed with p value of 0.630. Out of total 71 cases where full feed was not achieved, GI bleed was present in 4 (5.6%) cases (p value 0.135), ileus was present in 3 (4.2%) cases (p value 0.260), feed aspirate, burns, IEM, hepatic encephalopathy were present in 1 (1.4%) case each (p value 0.386). There was no case of GI bleed, ileus, burns, feed aspirate, hepatic encephalopathy and IEM where full feed was achieved. 8 (15.1%) cases of achieved feed and 3 (4.3%) cases of not achieved feed underwent surgery with p value of 0.786.

OUTCOMES IN RELATION TO MORBIDITY AND MORTALITY

As per data analysis, outcome was studied in the form of discharge, death and discharge against medical advice.

95 (76.6%) of total 124 enrolled subjects were discharged after successful PICU management in our study and 14 (11.3%) patients died. 15 (12.1%) cases went discharge against medical advice.

Out of 95 discharged patients, 42 (44.2%) were below the age of 5 years, 22 (23.2%) were from the age group of 5 to 10 years and 31 (32.6%) were above the age of 10 years. Out of 14 deaths, 4 (28.6%) were below the age of 5 years, 8 (57.1%) were from 5 to 10 years age group and 2 (14.3%) were above 10 years. Out of 15 cases of DAMA, 7 (46.7%) were below 5 years, 6 (40%) are 5 to 10 years and 2 (13.3%) were above 10 years. p value of association of age groups with outcome was 0.058.

69 (72.6%) cases of discharged were males and 26 (27.4%) cases were females. Out of 14 deaths, females were 6 (42.9%) and males were 8 (57.1%). 5 (33.3%) females and 10 (66.7%) males were discharged against medical advice. The p value of association of sex with outcome was 0.473.

The p value of association of indication of PICU admission with outcome was 0.003. Out of 95 discharged patients, 14 (14.7%) admitted with altered sensorium, 4 (4.2%) with electrolyte abnormality, 12 (12.6%) for observation, 10 (10.5%) with non-specified indications, 2 (2.1%) with persistent bleeding, 4 (4.2%) with recurrent seizures, 33 (34.7%) with respiratory distress, 6 (6.3%) with respiratory failure, 9 (9.5%) with shock and 1 (1.1%) with tachycardia. Out of 14 deaths, 1 (7.1%) admitted with AKI, 1 (7.1%) with persistent bleeding, 2 (14.3%) with respiratory distress, 5 (35.7%) with respiratory failure, 5 (35.7%) with shock. Out of 15 DAMA patients, 3 (20%) admitted with altered sensorium, 1 (6.7%) for observation, 1 (6.7%) with non-specified indications, 4 (26.7%) with

respiratory distress, 5 (33.3%) with respiratory failure, 1 (6.7%) with shock. In a study conducted by Panchal et al 339 patients of shock were enrolled Mortality rates were lower in the fed group compared with the non-fed group (6.9 vs.15.9%; odds ratio: 0.39; 95% confidence interval: 0.18–0.84; $p < 0.01$). [70]

The p value of association of enteral nutrition with outcome was 0.0001. Out of 53 cases where full feed was achieved, all 53 (100%) cases were discharged. Out of 71 cases where full feed was not achieved, 42 (59.2%) cases were discharged, 14 (19.7%) are deaths and 15 (21.1%) were discharged against medical advice.

The association of PRISM score and full achievement of feeds was found to be statistically significant in our study with a p value of 0.009. Out of 124 cases 71 cases were not able to achieve full feeds of which 46(64.8%) had PRISM score of less than 9, 24 cases (33.8%) had PRISM score of 10-19 and 1 case (1.4%) had PRISM score of 20-29. out of 124 cases feed was fully achieved in 53 cases of which 47 cases (88.7%) had PRISM score of less than 9.

SUMMARY AND CONCLUSIONS

We conducted a prospective study PICU of Pediatric department of Dayanand Medical College and Hospital, Ludhiana on children from 1 -18 years of age after a minimum stay of 24 hours in which 124 patients were enrolled and an attempt was made to study the factors affecting enteral nutrition in children meeting the inclusion criteria.

1) Majority of the patients in our study were less than 5 years comprising 42.7 % (n=53) of total study population.
2) In our study 87 patients (70.2%) were males and 37 patients (29.8%) were females.
3) Mean age of total population of the study was 7.13 years.
4) Mean weight of enrolled cases was 25.98 kg and mean height was 115.57 cms.
5) Mean duration of stay was 5.58 days.
6) The most common indication for hospital admission was respiratory distress which was present in 39 (31.5%) patients followed by altered sensorium found in 17 (13.7%) cases.
7) Out of total 124 patients, enrolled in our study, 30 patients (24.2%) required ventilator support and 94 (76.7%) cases did not require ventilator.
8) Of the 124 patients, inotropes were used for 29 (23.4%) cases.
9) Out of total enrolled PICU subjects (124), in 20 (16.1%) patients, feed could not be started due to various factors.
10) Of 104 (83.9%) subjects in whom feed was started 38 (36.5%) patients were given direct oral feeds, in 61 (58.7%) patients Nasogastric tube feeding was given and only 5 (4.8%) patients received Oro-gastric tube feeding.
11) Of the 104 patients in whom feed was started , full feed was achieved in 53 (42.7%) patients . of these 53 patients , full feed was achieved within3 days in 24 (19.4%) patients, within 3 to 7 days

in 24 (19.4%) patients and after 7 days in 5 (4%) patients.

12) Out of 71 cases in whom full feed was not achieved, in 17 (23.9%) cases feed was started within 3 days, in 29 (40.8%) cases feed was started within 3 to 7 days and in 5 (7%) cases, feed was started after 7 days. In rest of the 20 patients (28.2%) feeding could not be started. the association of day of starting feed with full achievement of feed was found to be statistically significant with p value of 0.0001.

13) The association of mode of feeding with achievement of full feed was statistically significant in our study with p value of 0.001 .direct oral feed was given in 28 (52.8%) patients out of 53 patients (total number of caseswith full achievement of feed).

14) Out of 71 cases in which full feeding could not be achieved 28 wereon ventilator support. The association of ventilator support was statistically significant with p value of 0.0001 and was the most common factor in non attainment of full feed.

15) In 24 cases (33.9 percent) in which full feed could not be achieved shock was present. The association of shock with non achievement of full feed was found to be statistically significant with p value of 0.002.

16) The association of AKI with non attainment of full feed was statistically significant with p value of 0.020 with AKI present in 9 (12.7%) patients not achieving full feeds.

17) The association of respiratory distress , dyselectrolytemia , heart failure , seizures , heart failures ,surgery , ileus , burns , IEM , hepatic encephalopathy and aspirate with non achievement of full feeds wasevaluated and was found to be insignificant.

18) The association of enteral nutrition with outcome was evaluated and found to be statistically significant with p value of 0.0001. Out of 53 caseswhere full feed was achieved all 53 (100%) cases were discharged while Out of 71 cases where full feed was not achieved,

42 (59.2%) cases were discharged, 14 (19.7%) were deaths and 15 (21.1%) were discharged against medical advice.

19) Out of 124 cases, 71 cases were not able to achieve full feeds of which 46(64.8%) had PRISM score of less than 9, 24 cases (33.8%) had PRISM score of 10-19 and 1 case(1.4%) had PRISM score of 20-29. Out of 124 cases, feed was fully achieved in 53 cases of which 47 cases (88.7%) had PRISM score of less than 9. The association of PRISM score and full achievement of feeds was found to be statistically significant in our study with a p value of 0.009.

LIMITATIONS

1. The children shifted from PICU to ward were not followed up due to which their progress with achievement of full feed was not recorded.
2. Nursing barrier practices constitute an important factor in the non achievement of full feeds and were unaccounted for in our study.
3. There is dearth of data with respect to similar study available in thesame geographical region.

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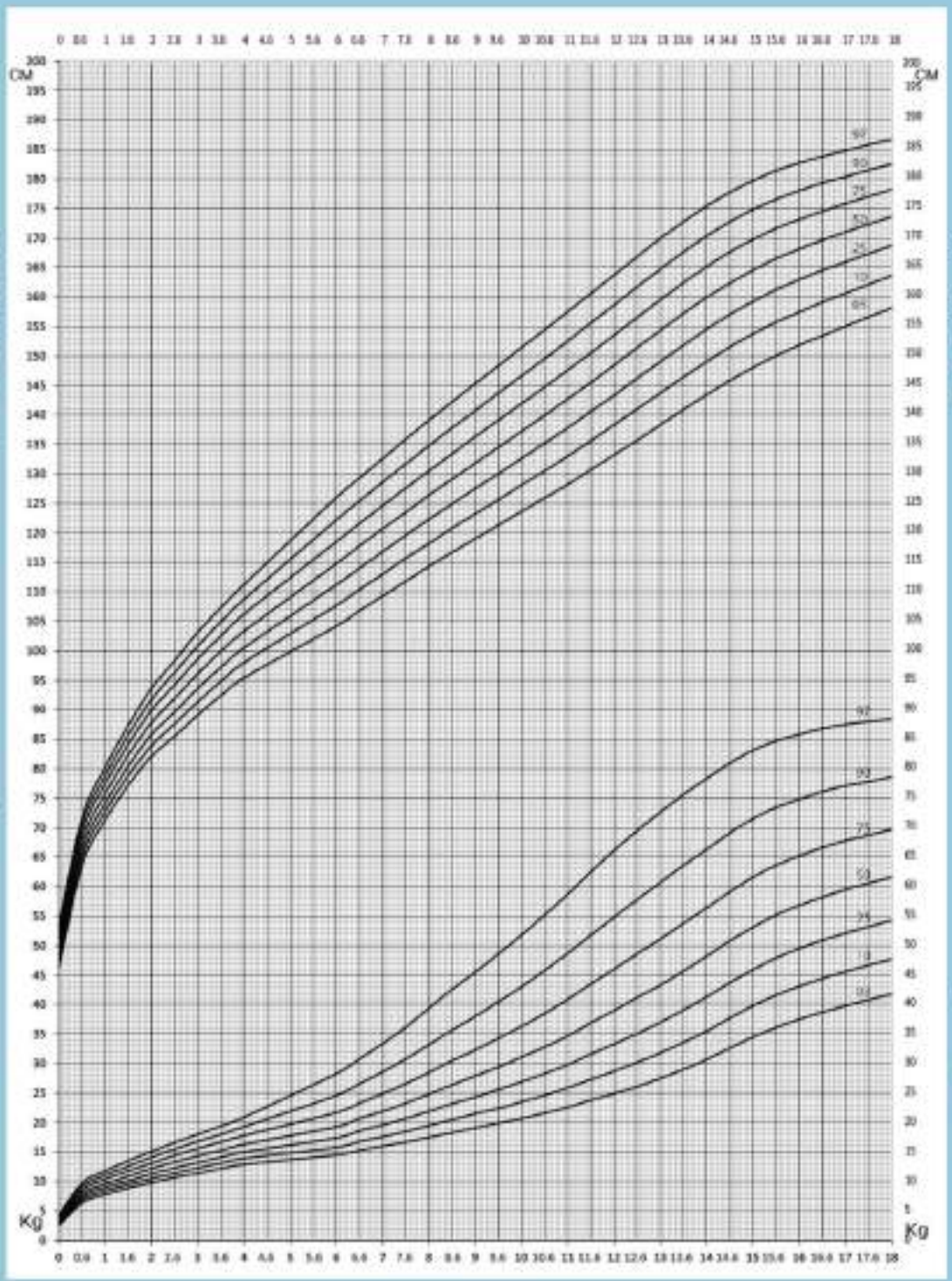
0 to 18 Years: Boys

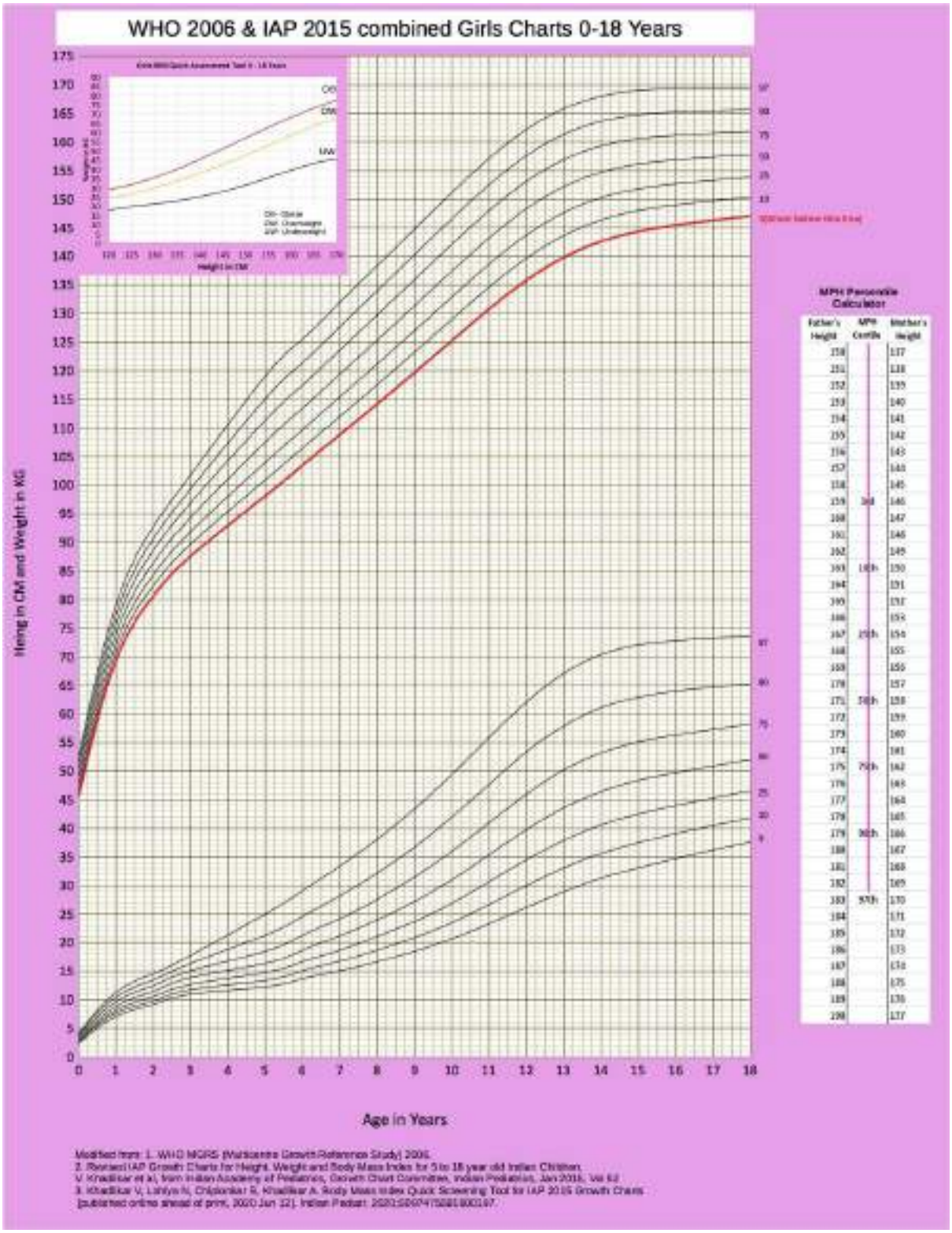
WHO 2006 & IAP 2015 Combined Height & Weight Charts

NAME _____

DOB _____



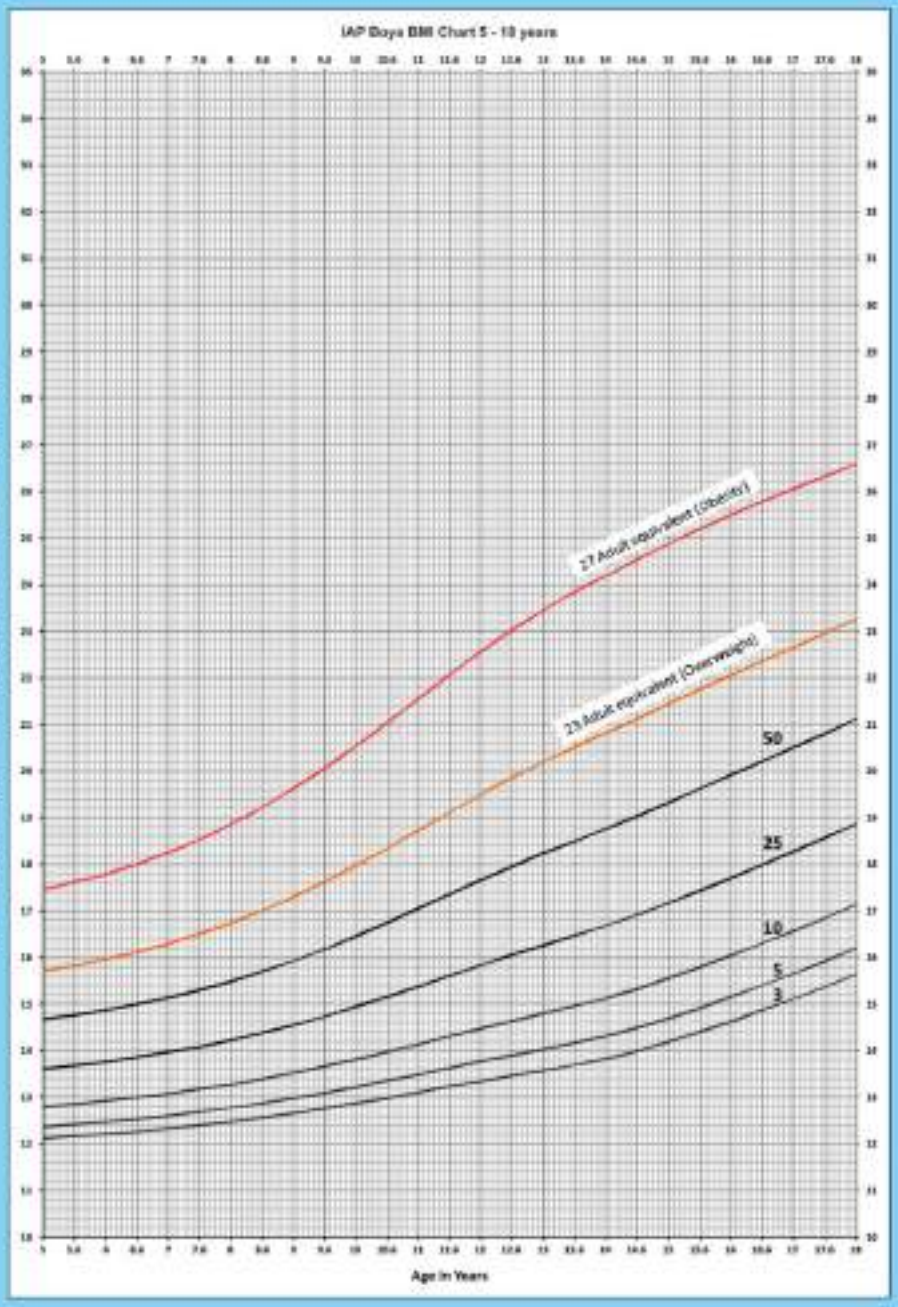
1. WHO 2006 MGRS Charts
2. Revised IAP Growth Charts for Height, Weight and Body Mass Index for 5 to 18 year old Indian Children
V.Khadilkar et al; from Indian Academy of Pediatrics. Growth Chart Committee. Indian Pediatrics. Jan. 2015, Volume 52


WHO 2006 & IAP 2015 combined Girls Charts 0-18 Years
Height in CM and Weight in KG
Age in Years
MPH Percentile Calculator
Father's Height
MPH Centile
Mother's Height
Modified from: 1. WHO MGRS (Multicentre Growth Reference Study) 2006.
2. Revised IAP Growth Charts for Height, Weight and Body Mass Index for 5 to 18 year old Indian Children.
V. Khadilkar et al, from Indian Academy of Pediatrics, Growth Chart Committee, Indian Pediatrics, Jan 2015, Vol 52
3. Khadilkar V, Lahiya N, Chiplonkar S, Khadilkar A. Body Mass Index Quick Screening Tool for IAP 2015 Growth Charts
[published online ahead of print, 2020 Jun 12]. Indian Pediatr. 2020;S097475201800197

5 to 18 Years : IAP Boys Body Mass Index Charts

Name _____

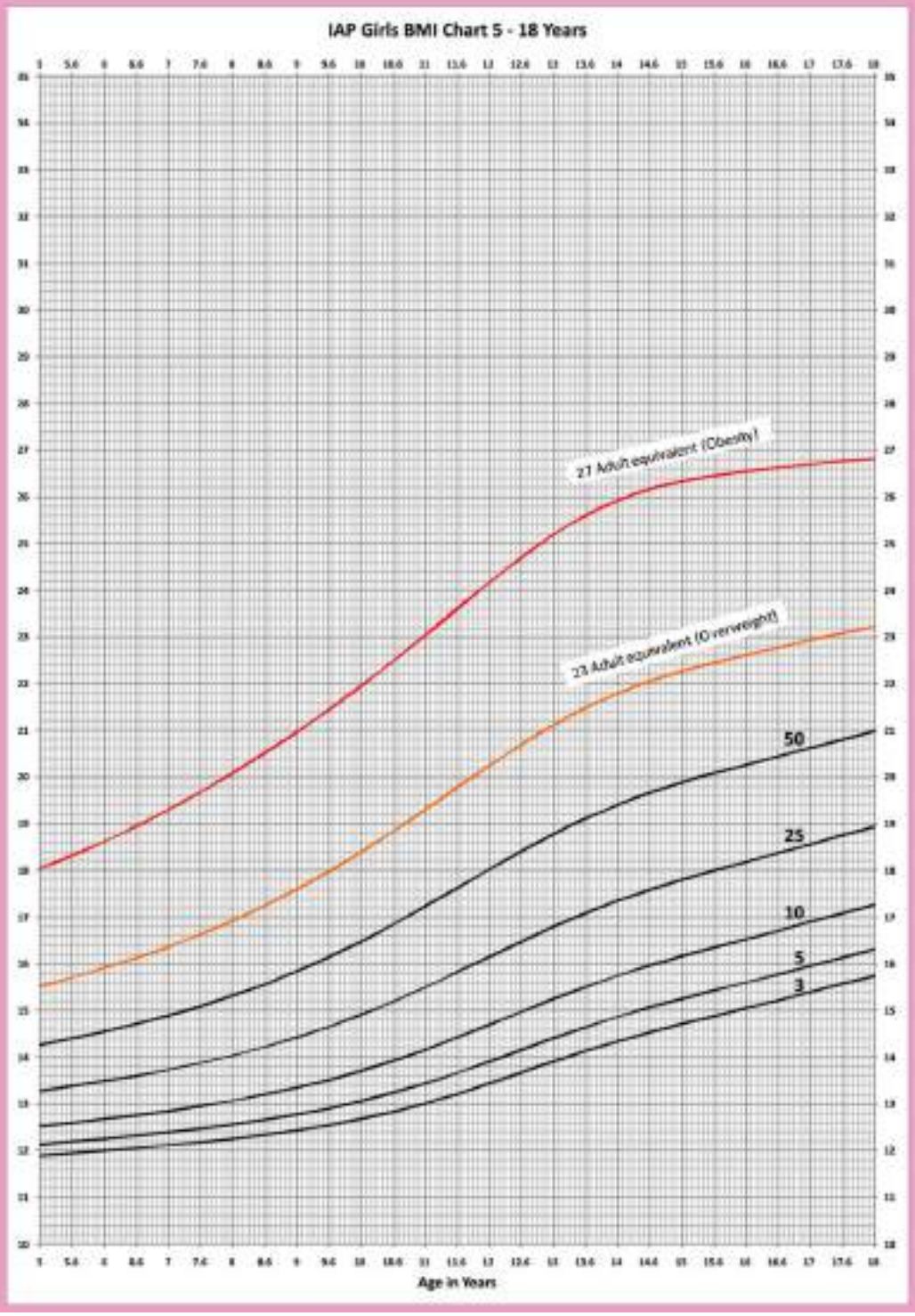
DOB _____



5 to 18 Years : IAP Girls Body Mass Index Charts

Name _____

DOB _____



Revised IAP growth charts for height, weight & body mass index for 5 to 18 year old Indian children
V. Khadilkar et al. / Indian Academy of Pediatrics Growth Chart Committee Indian Pediatrics Jan 2015, volume 52

APPENDIX VII. Vital signs in children of various ages

Age	*Heart rate (beats/min.)*	*Respiratory rate (beats/min.)*	*Blood pressure systolic/diastolic (mm Hg)*
Premature	120–170	40–70	55–75/35–45
0–3 mo	100–150	35–55	65–85/45–55
3–6 mo	90–120	30–45	70–90/50–65
6–12 mo	80–120	25–40	80–100/55–65
1–3 yr	70–110	20–30	90–105/55–70
3–6 yr	65–110	20–25	95–110/60–75
6–12 yr	60–95	14–22	100–120/60–75
≥12 yr	55–85	12–18	110–135/65–85

Source: Kleigman RM *et al.* Nelson Textbook of Pediatrics. 19th Ed, Saunders, Philadelphia, 2011.

BOYS

Age	BP Percentile	Systolic BP (mm Hg) Percentile of Height							Diastolic BP (mm Hg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	80	81	83	85	87	88	89	34	35	36	37	38	39	39
	90th	94	95	97	99	100	102	103	49	50	51	52	53	53	54
	95th	98	99	101	103	104	106	106	54	54	55	56	57	58	58
	99th	105	106	108	110	112	113	114	61	62	63	64	65	66	66
2	50th	84	85	87	88	90	92	92	39	40	41	42	43	44	44
	90th	97	99	100	102	104	105	106	54	55	56	57	58	58	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
	99th	109	110	111	113	115	117	117	66	67	68	69	70	71	71
3	50th	86	87	89	91	93	94	95	44	44	45	46	47	48	48
	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	110	112	113	63	63	64	65	66	67	67
	99th	111	112	114	116	118	119	120	71	71	72	73	74	75	75
4	50th	88	89	91	93	95	96	97	47	48	49	50	51	51	52
	90th	102	103	105	107	109	110	111	62	63	64	65	66	66	67
	95th	106	107	109	111	112	114	115	66	67	68	69	70	71	71
	99th	113	114	116	118	120	121	122	74	75	76	77	78	78	79
5	50th	90	91	93	95	96	98	98	50	51	52	53	54	55	55
	90th	104	105	106	108	110	111	112	65	66	67	68	69	69	70
	95th	108	109	110	112	114	115	116	69	70	71	72	73	74	74
	99th	115	116	118	120	121	123	123	77	78	79	80	81	81	82
6	50th	91	92	94	96	98	99	100	53	53	54	55	56	57	57
	90th	105	106	108	110	111	113	113	68	68	69	70	71	72	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
	99th	116	117	119	121	123	124	125	80	80	81	82	83	84	84
7	50th	92	94	95	97	99	100	101	55	55	56	57	58	59	59
	90th	106	107	109	111	113	114	115	70	70	71	72	73	74	74
	95th	110	111	113	115	117	118	119	74	74	75	76	77	78	78
	99th	117	118	120	122	124	125	126	82	82	83	84	85	86	86
8	50th	94	95	97	99	100	102	102	56	57	58	59	60	60	61
	90th	107	109	110	112	114	115	116	71	72	72	73	74	75	76
	95th	111	112	114	116	118	119	120	75	76	77	78	79	79	80
	99th	119	120	122	123	125	127	127	83	84	85	86	87	87	88
9	50th	95	96	98	100	102	103	104	57	58	59	60	61	61	62
	90th	109	110	112	114	115	117	118	72	73	74	75	76	76	77
	95th	113	114	116	118	119	121	121	76	77	78	79	80	81	81
	99th	120	121	123	125	127	128	129	84	85	86	87	88	88	89
10	50th	97	98	100	102	103	105	106	58	59	60	61	61	62	63
	90th	111	112	114	115	117	119	119	73	73	74	75	76	77	78
	95th	115	116	117	119	121	122	123	77	78	79	80	81	81	82
	99th	122	123	125	127	128	130	130	85	86	86	88	88	89	90
11	50th	99	100	102	104	105	107	107	59	59	60	61	62	63	63
	90th	113	114	115	117	119	120	121	74	74	75	76	77	78	78
	95th	117	118	119	121	123	124	125	78	78	79	80	81	82	82
	99th	124	125	127	129	130	132	132	86	86	87	88	89	90	90
12	50th	101	102	104	106	108	109	110	59	60	61	62	63	63	64
	90th	115	116	118	120	121	123	123	74	75	75	76	77	78	79
	95th	119	120	122	123	125	127	127	78	79	80	81	82	82	83
	99th	126	127	129	131	133	134	135	86	87	88	89	90	90	91
13	50th	104	105	106	108	110	111	112	60	60	61	62	63	64	64
	90th	117	118	120	122	124	125	126	75	75	76	77	78	79	79
	95th	121	122	124	126	128	129	130	79	79	80	81	82	83	83
	99th	128	130	131	133	135	136	137	87	87	88	89	90	91	91
14	50th	106	107	109	111	113	114	115	60	61	62	63	64	65	65
	90th	120	121	123	125	126	128	128	75	76	77	78	79	79	80
	95th	124	125	127	128	130	132	132	80	80	81	82	83	84	84
	99th	131	132	134	136	138	139	140	87	88	89	90	91	92	92

Girls

Age	BP Percentile	Systolic BP (mm Hg) Percentile of Height							Diastolic BP (mm Hg) Percentile of Height						
		5th	10th	25th	50th	75th	90th	95th	5th	10th	25th	50th	75th	90th	95th
1	50th	83	84	85	86	88	89	90	38	39	39	40	41	41	42
	90th	97	97	98	100	101	102	103	52	53	53	54	55	55	56
	95th	100	101	102	104	105	106	107	56	57	57	58	59	59	60
	99th	108	108	109	111	112	113	114	64	64	65	65	66	67	67
2	50th	85	85	87	88	89	91	91	43	44	44	45	46	46	47
	90th	98	99	100	101	103	104	105	57	58	58	59	60	61	61
	95th	102	103	104	105	107	108	109	61	62	62	63	64	65	65
	99th	109	110	111	112	114	115	116	69	69	70	70	71	72	72
3	50th	86	87	88	89	91	92	93	47	48	48	49	50	50	51
	90th	100	100	102	103	104	106	106	61	62	62	63	64	64	65
	95th	104	104	105	107	108	109	110	65	66	66	67	68	68	69
	99th	111	111	113	114	115	116	117	73	73	74	74	75	76	76
4	50th	88	88	90	91	92	94	94	50	50	51	52	52	53	54
	90th	101	102	103	104	106	107	108	64	64	65	66	67	67	68
	95th	105	106	107	108	110	111	112	68	68	69	70	71	71	72
	99th	112	113	114	115	117	118	119	76	76	76	77	78	79	79
5	50th	89	90	91	93	94	95	96	52	53	53	54	55	55	56
	90th	103	103	105	106	107	109	109	66	67	67	68	69	69	70
	95th	107	107	108	110	111	112	113	70	71	71	72	73	73	74
	99th	114	114	116	117	118	120	120	78	78	79	79	80	81	81
6	50th	91	92	93	94	96	97	98	54	54	55	56	56	57	58
	90th	104	105	106	108	109	110	111	68	68	69	70	70	71	72
	95th	108	109	110	111	113	114	115	72	72	73	74	74	75	76
	99th	115	116	117	119	120	121	122	80	80	80	81	82	83	83
7	50th	93	93	95	96	97	99	99	55	56	56	57	58	58	59
	90th	106	107	108	109	111	112	113	69	70	70	71	72	72	73
	95th	110	111	112	113	115	116	116	73	74	74	75	76	76	77
	99th	117	118	119	120	122	123	124	81	81	82	82	83	84	84
8	50th	95	95	96	98	99	100	101	57	57	57	58	59	60	60
	90th	108	109	110	111	113	114	114	71	71	71	72	73	74	74
	95th	112	112	114	115	116	118	118	75	75	75	76	77	78	78
	99th	119	120	121	122	123	125	125	82	82	83	83	84	85	86
9	50th	96	97	98	100	101	102	103	58	58	58	59	60	61	61
	90th	110	110	112	113	114	116	116	72	72	72	73	74	75	75
	95th	114	114	115	117	118	119	120	76	76	76	77	78	79	79
	99th	121	121	123	124	125	127	127	83	83	84	84	85	86	87
10	50th	98	99	100	102	103	104	105	59	59	59	60	61	62	62
	90th	112	112	114	115	116	118	118	73	73	73	74	75	76	76
	95th	116	116	117	119	120	121	122	77	77	77	78	79	80	80
	99th	123	123	125	126	127	129	129	84	84	85	86	86	87	88
11	50th	100	101	102	103	105	106	107	60	60	60	61	62	63	63
	90th	114	114	116	117	118	119	120	74	74	74	75	76	77	77
	95th	118	118	119	121	122	123	124	78	78	78	79	80	81	81
	99th	125	125	126	128	129	130	131	85	85	86	87	87	88	89
12	50th	102	103	104	105	107	108	109	61	61	61	62	63	64	64
	90th	116	116	117	119	120	121	122	75	75	75	76	77	78	78
	95th	119	120	121	123	124	125	126	79	79	79	80	81	82	82
	99th	127	127	128	130	131	132	133	86	86	87	88	88	89	90
13	50th	104	105	106	107	109	110	110	62	62	62	63	64	65	65
	90th	117	118	119	121	122	123	124	76	76	76	77	78	79	79
	95th	121	122	123	124	126	127	128	80	80	80	81	82	83	83
	99th	128	129	130	132	133	134	135	87	87	88	89	89	90	91
14	50th	106	106	107	109	110	111	112	63	63	63	64	65	66	66
	90th	119	120	121	122	124	125	125	77	77	77	78	79	80	80
	95th	123	123	125	126	127	129	129	81	81	81	82	83	84	84
	99th	130	131	132	133	135	136	136	88	88	89	90	90	91	92

SR NO	Name	MRD No	Age_year	DIAGNOSIS	Weight (kg)	Height (cm)	Sex	Main_system	indi_admn_picu	sys_bp_child	sys_bp adolescent	hr children	rr childern	TEMP	FIRST ABG ANALYSIS pao2	FIRST ABG ANALYSIS paco2	FIRST ABG ANALYSIS hco3	BLOOD UREA	s_cr infant	S. Creatinine	s_na	s_k	s_ca	ventilator	duration vent	intropes	oxygen	PRISM	PRISM GROUP	outcome
1	NB	1007117	12	Ketoacidosis (new onset)	40	135	M	Endocrine/Metabolic	Resp distress	-	>85	81-149	<50	95-102	>60	<50	<16	<40	<40	<1.3	125-135	3-3.5	8-11	No	-	N	Y	7	1	1
2	P	1007436	12	Enteric Fever with ? Meningitis ? TB with Pancytopenia	40	143	M	Gastrointestinal	Altered sensorium	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	1	1	1
3	R	915600	1	Acidosis with sepsis with Acute Kidney Injury with peritoneal	6.7	70	M	Endocrine/Metabolic	Resp distress	>75	-	81-149	51-70	95-102	>60	<50	<16	>40	-	>1.3	135-145	3.5-6.5	8-11	No	-	N	Y	1	1	1
4	AB	1007987	14	Meningitis	65	152	M	Neurologic	Altered sensorium	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	1	1	1
5	DS	952856	16	TTP	68.5	168	M	Hematology/Oncology	Others	-	>85	81-149	<50	95-102	>60	<50	16-32	>40	-	<1.3	135-145	3-3.5	8-11	No	-	N	Y	1	1	1
6	R	1009625	5	Viral hepatitis	16	110	F	Neurologic	Altered sensorium	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3-3.5	8-11	Yes	4-7	Y	Y	15	2	3
7	O	1010810	14	Addison's Disease with Adrenal Crisis	62	156	F	Endocrine/Metabolic	Observation	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	4	1	1
8	S	1009625	10	with hepatic encephalopathy grade	28	98	F	Gastrointestinal	Altered sensorium	>75	-	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	145-160	3.5-6.5	8-11	No	-	N	Y	5	1	1
9	AP	1010810	8	with Acute Kidney Injury	35	126	M	Surgical/trauma	Others	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	>1.3	135-145	3.5-6.5	8-11	No	-	N	N	5	1	1
10	H	1010916	3	Post Operative Ruptured Appendicitis	15	95	M	Surgical/trauma	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	145-160	3.5-6.5	8-11	No	-	N	Y	5	1	1
11	D	952856	16	TTP	68.5	168	M	Hematology/Oncology	Others	-	>85	81-149	<50	95-102	>60	<50	16-32	>40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	Y	3	1	1
12	V	1011219	8	MISC with Shock With Respiratory Distress	36	128	M	Multi-System and Other	Resp failure	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	3	1	1
13	LS	1011494	12	with Cardiogenic shock with Respiratory Failure with ARDS	25	154	M	Respiratory System	Resp distress	-	65-85	81-149	51-70	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	7-14	N	Y	6	1	1
14	G	1011489	10	Ketoacidosis (new onset)	25	149	M	Endocrine/Metabolic	Resp distress	-	65-85	81-149	51-70	95-102	>60	<50	<16	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	7	1	1
15	H	354827	6	Nephrotic Syndrome with respiratory failure with AKI	17	110	M	Renal System	Resp distress	55-75	-	81-149	51-70	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	Yes	2	N	N	5	1	3
16	R	1012312	2	Encephalopathy with acute liver failure with respiratory failure	11	88	M	Gastrointestinal	Resp failure	55-75	-	81-149	51-70	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	6	1	3
17	A	1013084	2	H/O Fall from height with Mild TBI	14	90	M	Surgical/trauma	Observation	55-75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	8	1	1
18	AK	1013192	14	TBI with Shock With Respiratory Failure	40	154	M	Surgical/trauma	Resp failure	-	65-85	81-149	51-70	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	N	7	1	1
19	SA	992720	2	Neuroblastoma, post Excision	9	78	M	Hematology/Oncology	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	6	1	1
20	MK	934529	6	ataxia with Seizures with status epilepticus	16	108	F	Neurologic	Recurrent seizures	55-75	-	81-149	51-70	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	5	1	1
21	MS	1014396	12	with acute kidney injury	33.6	143	M	Multi-System and Other	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	>40	-	>1.3	135-145	3-3.5	8-11	No	-	N	N	1	1	1
22	AD	1015011	16	New Onset Type 1 Diabetes with Severe Diabetic Ketoacidosis	70	168	M	Endocrine/Metabolic	Altered sensorium	-	>85	<80	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3-3.5	8-11	No	-	N	N	5	1	1
23	P	1015653	1	bronchiolitis	8	74	F	Respiratory System	Resp distress	55-75	-	81-149	51-70	95-102	>60	<50	16-32	<40	<0.9	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	6	1	1
24	A	1016044	12	mellitus with Hypothyroidism with Severe Diabetic	30	133	M	Endocrine/Metabolic	Altered sensorium	-	>85	81-149	<50	95-102	>60	50-65	<16	<40	-	<1.3	135-145	<3	8-11	No	-	N	N	13	2	1
25	AS	957296	10	anemia post BMT with Graft rejection	28	138	M	Hematology/Oncology	Shock	-	>85	81-149	<50	>102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	1-3	Y	Y	12	2	2
26	AP	996861	1	gangrene post amputation	9	70	M	Neurologic	Observation	55-75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	3	1	1
27	A	1021112	14	MISC with Shock With Respiratory Failure	45	153	F	Multi-System and Other	Resp failure	-	65-85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	1-3	Y	Y	8	1	3
28	DS	1004057	16	disorder with left sided hemiplegia with infarcts	63	165	M	Hematology/Oncology	Resp distress	-	>85	81-149	<50	>102	40-60	<50	16-32	>40	-	<1.3	>160	3.5-6.5	8-11	Yes	2	Y	N	1	1	3

SR NO	Name	DISCHARGED	DIED	DAMA	duration stay	DAY OF STARTING FEED	DAY OF STARTING FEED LESS THAN 3	DAY OF STARTING FEED 3 TO 7	DAY OF STARTING FEED MORE THAN 7	DAY OF STARTING FEED NOT STARTED	MODE OF FEEDING	MODE OF FEEDING ORAL	MODE OF FEEDING ng	MODE OF FEEDING og	MODE OF FEEDING nj	full feed achieved	full feed acheived in less than 3	full feed acheived 3-7 days	full feed acheived more than 7 days	full feed acheived no	reason for not achieving	AKI	aspirate	shock	ventilator	hepatic	r.distress	seizures	h.failure	dyselectrol	GI bleed	ileus	burns	IEM	SURGERY
1	NB	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
2	P	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
3	R	Y	N	N	6	2	0	1	0	0	3	0	0	1	0	4	0	0	0	1	ACUTE KIDNEY INJURY	Y	N	N	N	N	N	N	N	N	N	N	N	N
4	AB	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
5	DS	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
6	R	N	N	Y	12	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	ASPIRATE	N	Y	N	N	N	N	N	N	N	N	N	N	N
7	O	Y	N	N	1	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
8	S	Y	N	N	4	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
9	AP	Y	N	N	4	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
10	H	Y	N	N	2	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
11	D	Y	N	N	1	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
12	V	Y	N	N	5	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
13	LS	Y	N	N	9	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	VENTILATOR SUPPORT	N	N	N	Y	N	N	N	N	N	N	N	N	N
14	G	Y	N	N	2	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
15	H	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	VENTILATOR SUPPORT	N	N	Y	Y	N	N	N	N	N	N	N	N	N
16	R	N	N	Y	3	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	HEPATIC ENCEPHALOPATHY	N	N	N	N	Y	N	N	N	N	N	N	N	N
17	A	Y	N	N	3	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
18	AK	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	3	0	0	1	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
19	SA	Y	N	N	6	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
20	MK	Y	N	N	5	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
21	MS	Y	N	N	5	2	0	1	0	0	1	1	0	0	0	4	0	0	0	1	KIDNEY INJURY	Y	N	N	N	N	N	N	N	N	N	N	N	N
22	AD	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
23	P	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
24	A	Y	N	N	4	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
25	AS	N	Y	N	5	2	0	1	0	0	3	0	0	1	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
26	AP	Y	N	N	2	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
27	A	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
28	DS	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	VENTILATOR SUPPORT	N	N	N	Y	N	N	N	N	N	N	N	N	N

SR NO	Name	MRD No	Age_year	DIAGNOSIS	Weight (kg)	Height (cm)	Sex	Main_system	indi_admn_picu	sys_bp_child	sys_bp adolescent	hr children	rr childern	TEMP	FIRST ABG ANALYSIS pao2	FIRST ABG ANALYSIS paco2	FIRST ABG ANALYSIS hco3	BLOOD UREA	s_cr infant	S. Creatinine	s_na	s_k	s_ca	ventilator	duration vent	intropes	oxygen	PRISM	PRISM GROUP	outcome
29	K	1020933	12	Syndrome	41	152	M	Neurologic	Others	-	>85	81-149	<50	95-102	>60	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	0	1	1
30	A	1021489	12	INTRACRANIAL SPACE OCCUPYING LESION ? MEDULLOBLASTOMA	40	114	M	Neurologic	Altered sensorium	-	>85	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3-3.5	8-11	Yes	3	N	N	5	1	1
31	KS	1021487	10	Toxic Shock syndrome	32	132	M	Multi-System and Other	Resp failure	55-75	-	81-149	<50	>102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	<24	N	N	6	1	2
32	GS	1024772	6	with respiratory failure with shock	20	112	M	Neurologic	Altered sensorium	>75	-	<80	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	Yes	4-7	N	Y	7	1	3
33	DS	1004057	16	Respiratory failure with shock with sepsis with fungal cerebritis	63	165	M	Hematology/Oncology	Resp failure	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	4-7	N	N	7	1	1
34	A	1026978	1	metabolic acidosis with respiratory failure with	6	66	F	Multi-System and Other	Resp failure	55-75	-	81-149	51-70	95-102	40-60	<50	<16	<40	<0.9	<1.3	135-145	3-3.5	7-8	Yes	7-14	N	Y	15	2	1
35	M	1026979	3	SAIO	15	114	M	Gastrointestinal	Others	55-75	-	81-149	<50	95-102	<40	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	7	1	1
36	PS	893432	4	chronic lung disease with pulmonary hypertension with congestive heart	10	98	M	Cardiovascular System	Resp distress	>75	-	81-149	<50	95-102	>60	50-65	>32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	1-3	N	N	17	2	1
37	R	1027876	8	Leukemia	26	136	F	Hematology/Oncology	Others	>75	-	>150	<50	95-102	<40	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	9	1	1
38	TS	979378	1	MENINGITIS	8	72	M	Neurologic	Recurrent seizures	>75	-	81-149	<50	95-102	>60	<50	<16	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	6	1	1
39	B	1028751	1	P/O/C/O Neck abscess (I&D done)	11.8	74	M	Surgical/trauma	Resp distress	>75	-	>150	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	7	1	1
40	F	1029351	16	tuberculosis	45	158	F	Gastrointestinal	bleeding	>75	-	>150	<50	95-102	>60	<50	16-32	>40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	4	1	1
41	E	8830003	10	febrile neutropenia with shock	32	136	M	Hematology/Oncology	Shock	55-75	-	81-149	<50	95-102	<40	<50	16-32	<40	-	<1.3	135-145	<3	8-11	Yes	1-3	N	Y	11	2	2
42	K	1030061	7	CELPHOS POISONING	25	126	M	Multi-System and Other	Observation	>75	-	81-149	<50	95-102	<40	<50	<16	<40	-	>1.3	135-145	3.5-6.5	8-11	No	-	N	N	6	1	1
43	A	1012285	1	encephalitis with neurological sequele with Seizures	6	72	M	Neurologic	Observation	>75	-	81-149	<50	95-102	<40	<50	16-32	>40	-	<1.3	145-160	3.5-6.5	8-11	Yes	1-3	N	Y	0	1	3
44	TC	1032970	2	METABOLIC ACIDOSIS WITH LIVER FAILURE WITH SEPSIS	14	92	F	Multi-System and Other	Shock	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	8	1	2
45	M	1036040	7	LGBS with bulbar palsy with PEM grade 3	15	114	F	Neurologic	Resp distress	>75	-	>150	51-70	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	-	N	N	5	1	2
46	K	1035589	14	P/O/C/O INTESTINAL PERFORATION	48	154	M	Surgical/trauma	Shock	-	65-85	>150	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	7-8	No	-	Y	Y	5	1	1
47	K	928543	8	MAJOR WITH INFECTIVE	26	122	F	Hematology/Oncology	Shock	>75	-	>150	51-70	95-102	>60	50-65	<16	>40	-	>1.3	125-135	3.5-6.5	8-11	No	-	Y	N	15	2	2
48	A	941796	16	EWING'S SARCOMA	58	169	M	Hematology/Oncology	Resp failure	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	1	N	Y	17	2	2
49	SK	1043901	15	MODS	42	151	M	Multi-System and Other	Shock	-	>85	81-149	<50	>102	<40	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	7-8	No	-	N	Y	8	1	1
50	R	1027876	8	WITH DRUG INDUCED RASH	26	136	F	Hematology/Oncology	Shock	55-75	-	81-149	<50	>102	40-60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	7-8	No	-	Y	Y	12	2	2
51	SS	1047689	1	acute bronchiolitis	12	90	M	Respiratory System	Resp distress	55-75	-	81-149	<50	95-102	40-60	50-65	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	7	1	1
52	K	928543	8	WITH INFECTIVE ENDOCARDITIS WITH CCF	30	130	F	Hematology/Oncology	Resp distress	>75	-	81-149	<50	95-102	40-60	50-65	16-32	<40	-	>1.3	125-135	3.5-6.5	7-8	No	-	Y	Y	7	1	1
53	JR	1049614	2	BRONCHOPNEUMONI	12	95	M	Respiratory System	Resp distress	>75	-	81-149	51-70	95-102	40-60	50-65	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	6	1	1
54	BK	988999	2	RESPIRATORY DISTRESS	15	95	F	Hematology/Oncology	Resp distress	>75	-	81-149	<50	95-102	40-60	<50	16-32	<40	-	<1.3	125-135	3-3.5	7-8	No	-	N	Y	7	1	1
55	PK	690812	13	WITH RESPIRATORY DISTRESS	25	140	M	Hematology/Oncology	Resp distress	>75	-	81-149	<50	95-102	40-60	50-65	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	7	1	1
56	PG	1057977	6	PKAN WITH PEG TUBE INSERTION	25	-	F	Neurologic	Others	55-75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	8	1	1
57	K	928543	8	WITH INFECTIVE ENDOCARDITIS	35	130	F	Hematology/Oncology	Resp distress	>75	-	81-149	<50	95-102	40-60	50-65	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	Yes	4	Y	Y	15	2	2

SR NO	Name	DISCHARGED	DIED	DAMA	duration stay	DAY OF STARTING FEED	DAY OF STARTING FEED LESS THAN 3	DAY OF STARTING FEED 3 TO 7	DAY OF STARTING FEED MORE THAN 7	DAY OF STARTING FEED NOT STARTED	MODE OF FEEDING	MODE OF FEEDING ORAL	MODE OF FEEDING ng	MODE OF FEEDING og	MODE OF FEEDING nj	full feed achieved	full feed acheived in less than 3	full feed acheived 3-7 days	full feed acheived more than 7 days	full feed acheived no	reason for not achieving	AKI	aspirate	shock	ventilator	hepatic	r.distress	seizures	h.failure	dyselectrol	GI bleed	ileus	burns	IEM	SURGERY
29	K	Y	N	N	7	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
30	A	Y	N	N	18	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	DYSELECTROLYTEMIAS	N	N	N	N	N	N	N	N	Y	N	N	N	N
31	KS	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
32	GS	N	N	Y	11	3	0	0	1	0	2	0	1	0	0	4	0	0	0	1	SHOCK,ILEUS	N	N	Y	N	N	N	N	N	N	N	Y	N	N
33	DS	Y	N	N	15	3	0	0	1	0	2	0	1	0	0	4	0	0	0	1	SHOCK , DYSELECTROLYTEMIA	N	N	Y	N	N	N	N	N	Y	N	N	N	N
34	A	Y	N	N	15	3	0	0	1	0	3	0	0	1	0	4	0	0	0	1	IEM	N	N	N	N	N	N	N	N	N	N	N	Y	N
35	M	Y	N	N	10	3	0	0	1	0	2	0	1	0	0	3	0	0	1	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
36	PS	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	CARDIAC FAILURE	N	N	N	N	N	N	N	Y	N	N	N	N	N
37	R	Y	N	N	4	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
38	TS	Y	N	N	10	2	0	1	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
39	B	Y	N	N	2	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
40	F	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	4	0	0	0	1	BLEEDING	N	N	N	N	N	N	N	N	Y	N	N	N	N
41	E	N	Y	N	6	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
42	K	Y	N	N	4	2	0	1	0	0	1	1	0	0	0	4	0	0	0	1	KIDNEY	Y	N	N	N	N	N	N	N	N	N	N	N	N
43	A	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SEIZURES	N	N	N	N	N	N	Y	N	N	N	N	N	N
44	TC	N	Y	N	2	3	0	0	1	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
45	M	N	Y	N	2	1	1	0	0	0	1	1	0	0	0	4	0	0	0	1	VENTILATOR SUPPORT	N	N	N	Y	N	N	N	N	N	N	N	N	N
46	K	Y	N	N	5	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	DYSELECTROLYTEMIAS , SHOCK	N	N	Y	N	N	N	N	N	Y	N	Y	N	N
47	K	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK , SEIZURES	N	N	Y	N	N	N	Y	N	N	N	N	N	N
48	A	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	R SUPPORT	N	N	N	Y	N	N	N	N	N	N	N	N	N
49	SK	Y	N	N	7	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
50	R	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
51	SS	Y	N	N	5	1	1	0	0	0	2	0	1	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
52	K	Y	N	N	10	1	1	0	0	0	1	1	0	0	0	4	0	0	0	1	CARDIAC FAILURE	N	N	N	N	N	N	N	Y	N	N	N	N	N
53	JR	Y	N	N	5	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
54	BK	Y	N	N	4	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
55	PK	Y	N	N	5	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
56	PG	Y	N	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SURGERY	N	N	N	N	N	N	N	N	N	N	N	N	Y
57	K	N	Y	N	4	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	CARDIAC FAILURE	N	N	N	N	N	N	N	Y	N	N	N	N	N

SR NO	Name	MRD No	Age_year	DIAGNOSIS	Weight (kg)	Height (cm)	Sex	Main_system	indi_admn_picu	sys_bp_child	sys_bp adolescent	hr children	rr childern	TEMP	FIRST ABG ANALYSIS pao2	FIRST ABG ANALYSIS paco2	FIRST ABG ANALYSIS hco3	BLOOD UREA	s_cr infant	S. Creatinine	s_na	s_k	s_ca	ventilator	duration vent	intropes	oxygen	PRISM	PRISM GROUP	outcome
58	KG	1063820	10	K/C/O TOF WITOF ACUTE STROKE	30	130	M	Neurologic	Altered sensorium	55-75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	<125	3.5-6.5	8-11	Yes	<24	Y	Y	7	1	1
59	AS	1012285	1	Encephalitis	10	72	M	Neurologic	Altered sensorium	55-75	-	81-149	51-70	95-102	>60	<50	16-32	<40	<0.9	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	7	1	1
60	AS	1065627	1	Bronchial asthma	10	73	F	Respiratory System	Resp distress	55-75	-	81-149	51-70	95-102	>60	<50	16-32	<40	<0.9	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	6	1	1
61	RT	1066199	16	Bronchial asthma	55	156	M	Respiratory System	Resp distress	-	>85	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	Y	N	7	1	1
62	M	1069901	1	BRONCHIOLITIS	9.7	69	F	Respiratory System	Resp distress	55-75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	6	1	1
63	SS	203150	5	BRONCHOPNEUMONI	18	103	M	Respiratory System	Resp distress	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	6	1	1
64	RS	1070007	7	Encephalitis	23	120	M	Neurologic	Altered sensorium	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	Yes	<24	Y	Y	12	2	3
65	GS	219151	1	RESPIRATORY DISTRESS	13	88	F	Respiratory System	Resp distress	55-75	-	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	7	1	1
66	R	1072297	14	TUBERCULOSIS WITH RESPIRATORY	45	148	F	Respiratory System	Resp distress	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	6	1	1
67	RG	1083196	1	MISC	10	73	M	Respiratory System	Resp distress	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3-3.5	8-11	No	-	N	Y	7	1	1
68	MK	1073305	6	MYOCARDITIS	19	106	F	Cardiovascular System	Resp distress	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	8	1	1
69	G	1086689	13	dm TYPE 1 WITH SEVERE DKA WITH RESP FAILURE	44	146	M	Endocrine/Metabolic	Electrolyte abnormality	-	65-85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
70	MG	1087766	8	TROPICAL FEVER WITH MODS ?MISC	25	122	M	Multi-System and Other	Resp distress	-	>85	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
71	DS	986585	3	SHOCK WITH RESP DISTRESS	15	94	M	Hematology/Oncology	Shock	-	>85	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	Y	7	1	1
72	D	1093582	6	EMERGENCY WITH RENAL PARENCHYMAL DISEASE GRADE 2	20	107	F	Renal System	Shock	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	<125	3.5-6.5	8-11	No	-	Y	Y	7	1	1
73	HS	1093616	4	SHOCK WITH RESP DISTRESS	16	98	M	Hematology/Oncology	Resp distress	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	12	2	3
74	BS	1097617	2	Bronchopneumonia	12	95	M	Respiratory System	Resp distress	-	>85	81-149	<50	95-102	>60	50-65	<16	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
75	D	1093582	6	SEIZURE DISORDER	20	107	F	Neurologic	Recurrent seizures	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
76	MS	1093583	15	Bronchopneumonia	58	154	M	Respiratory System	Resp distress	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
77	HS	1100555	4	SHOCK WITH RESP DISTRESS	16	98	M	Hematology/Oncology	Shock	-	>85	81-149	<50	95-102	>60	50-65	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	6	1	1
78	MS	1100556	8	Bronchopneumonia	23	122	M	Respiratory System	Resp distress	-	>85	81-149	<50	95-102	>60	50-65	16-32	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	8	1	1
79	SP	1101376	3	FOCAL EPILEPSY WITH ALTERED SENSORIUM	15	95	M	Neurologic	Altered sensorium	-	>85	81-149	<50	95-102	>60	<50	<16	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	7	1	1
80	LS	1101534	1	ACUTE BRONCHOPNEUMONI	8	74	M	Respiratory System	Resp distress	55-75	-	81-149	51-70	95-102	>60	<50	<16	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	6	1	1
81	HS	968929	4	SHOCK WITH RESP DISTRESS	16	98	M	Hematology/Oncology	Resp distress	-	>85	81-149	<50	95-102	>60	<50	<16	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	Y	Y	7	1	3
82	TS	1110802	7	vertebral artery thrombus	21	119.5	M	Neurologic	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	6	1	1
83	MK	1108911	1	INGESTION (ACCIDENTAL)	12	88	M	Multi-System and Other	Resp failure	>75	-	>150	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	2	N	N	12	2	3
84	AS	1108275	6	DISSEMINATED STAPH INFECTION (MRSA)	16	114	F	Multi-System and Other	Others	>75	-	>150	<50	95-102	40-60	<50	16-32	>40	-	<1.3	125-135	3.5-6.5	8-11	No	-	Y	Y	13	2	3
85	JS	1106024	6	INFLAMMATORY SYNDROME IN CHILDREN	18	116	M	Multi-System and Other	Resp distress	<55	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	Y	6	1	1
86	VK	1106025	14	INFLAMMATORY SYNDROME IN CHILDREN	44	156	M	Multi-System and Other	Resp distress	<55	-	81-149	<50	95-102	>60	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	7	1	1
87	HS	1112868	8	DEPENDENT NEPHROTIC SYNDROME WITH	26	115	F	Renal System	Shock	>75	-	>150	<50	95-102	<40	<50	<16	>40	-	>1.3	125-135	3.5-6.5	<7	No	-	N	N	13	2	3
88	W	1113286	1	MIS-C	8	74	M	Multi-System and Other	Shock	>75	-	>150	<50	95-102	<40	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	N	5	1	1

SR NO	Name	DISCHARGED	DIED	DAMA	duration stay	DAY OF STARTING FEED	DAY OF STARTING FEED LESS THAN 3	DAY OF STARTING FEED 3 TO 7	DAY OF STARTING FEED MORE THAN 7	DAY OF STARTING FEED NOT STARTED	MODE OF FEEDING	MODE OF FEEDING ORAL	MODE OF FEEDING ng	MODE OF FEEDING og	MODE OF FEEDING nj	full feed achieved	full feed acheived in less than 3	full feed acheived 3-7 days	full feed acheived more than 7 days	full feed acheived no	reason for not achieving	AKI	aspirate	shock	ventilator	hepatic	r.distress	seizures	h.failure	dyselectrol	GI bleed	ileus	burns	IEM	SURGERY
58	KG	Y	N	N	6	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
59	AS	Y	N	N	6	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
60	AS	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
61	RT	Y	N	N	6	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
62	M	Y	N	N	8	1	1	0	0	0	2	0	1	0	0	3	0	0	1	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
63	SS	Y	N	N	8	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
64	RS	N	N	Y	17	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	ventilator support	N	N	N	Y	N	N	Y	N	N	N	N	N	N
65	GS	Y	N	N	6	1	1	0	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
66	R	Y	N	N	3	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
67	RG	Y	N	N	2	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
68	MK	Y	N	N	2	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
69	G	Y	N	N	5	1	1	0	0	0	1	1	0	0	0	4	0	0	0	1	DYSELECTROLYTEMIAS	N	N	N	N	N	N	N	N	Y	N	N	N	N
70	MG	Y	N	N	4	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
71	DS	Y	N	N	4	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
72	D	Y	N	N	5	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	CARDIAC FAILURE	N	N	N	N	N	N	N	Y	N	N	N	N	N
73	HS	N	N	Y	3	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
74	BS	Y	N	N	4	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	RY DISTRESS	N	N	N	N	N	Y	N	N	N	N	N	N	N
75	D	Y	N	N	3	2	0	1	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N
76	MS	Y	N	N	4	2	0	1	0	0	1	1	0	0	0	4	0	0	0	1	RY DISTRESS	N	N	N	N	N	Y	N	N	N	N	N	N	N
77	HS	Y	N	N	3	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	PIRATORY DISTRESS	N	N	Y	N	N	Y	N	N	N	N	N	N	N
78	MS	Y	N	N	3	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	RY DISTRESS	N	N	N	N	N	Y	N	N	N	N	N	N	N
79	SP	Y	N	N	2	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	SEIZURES	N	N	N	N	N	N	Y	N	N	N	N	N	N
80	LS	Y	N	N	5	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	RY DISTRESS	N	N	N	N	N	Y	N	N	N	N	N	N	N
81	HS	N	N	Y	1	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
82	TS	Y	N	N	5	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	SEIZURES	N	N	N	N	N	N	Y	N	N	N	N	N	N
83	MK	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	R SUPPORT , BURNS	N	N	N	Y	N	N	N	N	N	N	N	N	Y	N	N
84	AS	N	N	Y	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N
85	JS	Y	N	N	6	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	RY DISTRESS , SHOCK	N	N	Y	N	N	Y	N	N	N	N	N	N	N
86	VK	Y	N	N	4	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	RY DISTRESS , SHOCK	N	N	Y	N	N	Y	N	N	N	N	N	N	N
87	HS	N	N	Y	6	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	ACUTE KIDNEY INJURY	Y	N	Y	N	N	N	N	N	N	N	N	N	N
88	W	Y	N	N	7	2	0	1	0	0	1	1	0	0	0	4	0	0	0	1	shock	N	N	Y	N	N	N	N	N	N	N	N	N	N

SR NO	Name	MRD No	Age_year	DIAGNOSIS	Weight (kg)	Height (cm)	Sex	Main_system	indi_admn_picu	sys_bp_child	sys_bp adolescent	hr children	rr childern	TEMP	FIRST ABG ANALYSIS pao2	FIRST ABG ANALYSIS paco2	FIRST ABG ANALYSIS hco3	BLOOD UREA	s_cr infant	S. Creatinine	s_na	s_k	s_ca	ventilator	duration vent	intropes	oxygen	PRISM	PRISM GROUP	outcome
89	S	1113716	15	DROWNING	48	162	F	Multi-System and Other	Resp distress	-	>85	81-149	<50	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	6	1	1
90	KS	1114502	8	FRACTURE BOTH BONES LT LEG WITH RT LEG FIBULA	26	112	M	Surgical/trauma	Observation	>75	-	81-149	<50	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	7	1	1
91	T	1115500	3	INHALATION WITH ARDS	16	102	M	Respiratory System	Resp failure	>75	-	>150	<50	95-102	>60	>65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	4-7	N	Y	15	2	2
92	JP	1116690	8	ILLNESS WITH ACUTE ABDOMEN	29	143	M	Multi-System and Other	Resp failure	>75	-	81-149	<50	95-102	40-60	<50	16-32	<40	-	>1.3	135-145	3.5-6.5	8-11	Yes	1-3	Y	Y	12	2	3
93	AK	1119618	8	MISC	30	30	F	Multi-System and Other	Shock	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	Y	8	1	1
94	GS	1021758	1	ACUTE DIARRHEAL DISEASE WITH AKI	7.5	85	M	Renal System	AKI	55-75	-	81-149	<50	95-102	>60	<50	16-32	>40	>0.9	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	13	2	2
95	RG	1120586	2	DISEASE WITH UPPER GI BLEED	12	94	M	Gastrointestinal	Resp failure	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	1-3	N	Y	6	1	1
96	A	1121210	7	REYE' SYNDROME	7	64	F	Gastrointestinal	Resp failure	55-75	-	81-149	<50	95-102	>60	<50	16-32	<40	<0.9	<1.3	135-145	3.5-6.5	8-11	Yes	1-3	Y	Y	14	2	2
97	VK	1120600	4	CARDIOMYOPATHY	17.5	110	M	Cardiovascular System	TACHYCARDIA	>75	-	>150	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	N	6	1	1
98	SS	1122010	14	RSA	60	145	M	Surgical/trauma	Others	-	>85	>150	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	7	1	1
99	JS	1195760	2	B CELL ALL WITH FEBRILE NEUTROPENIA	10	88	M	Multi-System and Other	Altered sensorium	>75	-	81-149	<50	95-102	>60	<50	16-32	>40	-	<1.3	>160	3.5-6.5	7-8	Yes	7	Y	Y	14	2	1
100	D	1124960	1	immunodeficiency with pneumonia	7	71	F	Hematology/Oncology	Resp distress	>75	-	81-149	<50	95-102	>60	<50	16-32	>40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	10	2	1
101	A	1127196	10	opathy	25	136	M	Cardiovascular System	Shock	55-75	-	81-149	<50	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	7-8	No	-	Y	Y	8	1	1
102	TG	1127742	16	Viral hepatitis	70	186	M	Multi-System and Other	Resp distress	-	>85	81-149	<50	95-102	40-60	<50	16-32	>40	-	>1.3	135-145	3.5-6.5	8-11	No	-	Y	Y	8	1	1
103	SA	705934	2	Domestic fall	12	88	M	Surgical/trauma	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	10	2	1
104	AA	1128353	4	PANCYTOPENIA UNDER EVALUATION	17	103	M	Hematology/Oncology	Others	>75	-	81-149	<50	>102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	10	2	1
105	IK	1128996	13	sepsis with rt. thigh and both forearm abscess	35	152	M	Multi-System and Other	Shock	-	65-85	81-149	51-70	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	Y	Y	7	1	1
106	RS	1131098	15	Toxic shock syndrome	53	165	M	Multi-System and Other	Observation	-	>85	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	8	1	1
107	RS	1131098	7	Infrequent relapsing nephrotic syndrome	21	120	M	Renal System	Resp distress	-	>85	81-149	<50	95-102	40-60	>65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	3	N	Y	12	2	1
108	VM	1131755	3	SEIZURE DISORDER	10	90	F	Neurologic	Recurrent seizures	>75	-	81-149	<50	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	15	2	1
109	MK	1132398	1	A/H/O RSA WITH RESPIRATORY FAILURE	12	88	F	Surgical/trauma	Resp failure	<55	-	81-149	>70	95-102	<40	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	3	Y	N	12	2	3
110	YS	1133738	2	Sepsis	10	98	M	Gastrointestinal	Resp distress	55-75	-	81-149	51-70	95-102	<40	<50	16-32	<40	-	<1.3	135-145	<3	8-11	No	-	N	Y	8	1	1
111	SK	1133967	15	TROPICAL FEVER	55	165	M	Multi-System and Other	Resp distress	-	>85	<80	<50	95-102	40-60	50-65	16-32	<40	-	<1.3	135-145	<3	<7	No	-	N	Y	8	1	1
112	NN	1135097	2	Encephalitis	11	93	F	Neurologic	Altered sensorium	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	8	1	1
113	M	1135136	2	Enteric fever	7.7	75.5	F	Gastrointestinal	abnormality	>75	-	81-149	<50	95-102	40-60	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	7	1	1
114	AS	1135971	1	opathy	8.2	78	F	Cardiovascular System	Resp failure	55-75	-	>150	>70	95-102	40-60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	Yes	4-7	Y	N	8	1	1
115	D	1130247	3	Sepsis	24	123	M	Gastrointestinal	abnormality	>75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	7-8	No	-	N	N	13	2	1
116	A	1138247	2	Encephalitis	10	85	M	Neurologic	Altered sensorium	>75	-	81-149	<50	95-102	>60	<50	16-32	-	-	<1.3	135-145	3.5-6.5	7-8	No	-	N	Y	15	2	1
117	IK	1137717	7	DKA	24	120	F	Endocrine/Metabolic	abnormality	>75	-	81-149	<50	95-102	<40	<50	<16	<40	-	<1.3	125-135	3.5-6.5	8-11	No	-	N	N	14	2	1
118	US	1137737	12	ACUTE GI BLEEDING	38	148	M	Gastrointestinal	bleeding	-	>85	81-149	<50	95-102	40-60	50-65	16-32	-	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	9	1	1
119	JS	1138817	2	ALL	10	88	M	Hematology/Oncology	Altered sensorium	>75	-	>150	<50	95-102	>60	<50	<16	<40	-	<1.3	135-145	<3	8-11	No	-	N	N	7	1	1
120	S	889529	15	DKA	35	155	M	Endocrine/Metabolic	Altered sensorium	-	>85	>150	<50	95-102	<40	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	Y	3	1	1
121	AS	1140495	2	ILLNESS WITH RESPIRATORY FAILURE	12.3	92.7	M	Respiratory System	Resp failure	>75	-	>150	51-70	95-102	>60	50-65	16-32	<40	-	<1.3	135-145	3.5-6.5	7-8	Yes	2	N	N	21	3	2
122	KS	1141166	15	ACUTE GI BLEEDING	60	180	M	Gastrointestinal	bleeding	-	>85	81-149	<50	95-102	>60	<50	16-32	>40	-	>1.3	125-135	3-3.5	7-8	Yes	2	N	N	5	1	2
123	RS	1138868	3	fenestratiom	17	95	M	Surgical/trauma	Observation	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	12	2	1
124	Y	1144086	1	staphylococcal scalded skin syndrome	10.2	86	F	Multi-System and Other	Others	>75	-	81-149	<50	95-102	>60	<50	16-32	<40	-	<1.3	135-145	3.5-6.5	8-11	No	-	N	N	7	1	1

SR NO	Name	DISCHARGED	DIED	DAMA	duration stay	DAY OF STARTING FEED	DAY OF STARTING FEED LESS THAN 3	DAY OF STARTING FEED 3 TO 7	DAY OF STARTING FEED MORE THAN 7	DAY OF STARTING FEED NOT STARTED	MODE OF FEEDING	MODE OF FEEDING ORAL	MODE OF FEEDING ng	MODE OF FEEDING og	MODE OF FEEDING nj	full feed achieved	full feed acheived in less than 3	full feed acheived 3-7 days	full feed acheived more than 7 days	full feed acheived no	reason for not achieving	AKI	aspirate	shock	ventilator	hepatic	r.distress	seizures	h.failure	dyselectrol	GI bleed	ileus	burns	IEM	SURGERY
89	S	Y	N	N	6	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	distress	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
90	KS	Y	N	N	3	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	respiratory distress	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
91	T	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	VENTILATOR SUPPORT	N	N	N	Y	N	N	N	N	N	N	N	N	N	N
92	JP	N	N	Y	8	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	KIDNEY INJURY	Y	N	Y	N	N	N	N	N	N	N	N	N	N	N
93	AK	Y	N	N	5	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	RESPIRATORY	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N
94	GS	N	Y	N	4	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	KIDNEY INJURY	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
95	RG	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	GI BLEEDING	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
96	A	N	Y	N	3	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	RESPIRATORY	N	N	Y	N	N	Y	N	N	N	N	N	N	N	N
97	VK	Y	N	N	-	3	0	0	1	0	2	0	1	0	0	4	0	0	0	1	FAILURE	N	N	N	N	N	N	N	Y	N	N	N	N	N	N
98	SS	Y	N	N	6	2	0	1	0	0	3	0	0	1	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
99	JS	Y	N	N	8	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	ileus , DYSELECTR	N	N	Y	N	N	N	N	N	Y	N	Y	N	N	N
100	D	Y	N	N	4	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	respiratory distress	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
101	A	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	shock	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
102	TG	Y	N	N	15	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	shock	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
103	SA	Y	N	N	5	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
104	AA	Y	N	N	7	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
105	IK	Y	N	N	15	1	1	0	0	0	3	0	0	1	0	4	0	0	0	1	shock	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
106	RS	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
107	RS	Y	N	N	3	1	1	0	0	0	2	0	1	0	0	4	0	0	0	1	kidney injury	Y	N	N	N	N	N	N	N	N	N	N	N	N	N
108	VM	Y	N	N	1	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
109	MK	N	N	Y	1	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	shock	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
110	YS	Y	N	N	2	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
111	SK	Y	N	N	6	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	SHOCK	N	N	Y	N	N	N	N	N	N	N	N	N	N	N
112	NN	Y	N	N	7	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
113	M	Y	N	N	5	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
114	AS	Y	N	N	20	2	0	1	0	0	2	0	1	0	0	3	0	0	1	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
115	D	Y	N	N	12	2	0	1	0	0	2	0	1	0	0	3	0	0	1	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
116	A	Y	N	N	10	2	0	1	0	0	2	0	1	0	0	4	0	0	0	1	SEIZURES	N	N	N	N	N	N	Y	N	N	N	N	N	N	N
117	IK	Y	N	N	12	1	1	0	0	0	1	1	0	0	0	4	0	0	0	1	OLYTEMIAS	N	N	N	N	N	N	N	N	Y	N	N	N	N	N
118	US	Y	N	N	12	2	0	1	0	0	1	1	0	0	0	4	0	0	0	1	BLEEDING	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
119	JS	Y	N	N	14	2	0	1	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
120	S	Y	N	N	2	1	1	0	0	0	1	1	0	0	0	1	1	0	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
121	AS	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	R SUPPORT , SHOCK	N	N	Y	Y	N	N	N	N	N	N	N	N	N	N
122	KS	N	Y	N	2	4	0	0	0	1	-	0	0	0	0	4	0	0	0	1	BLEEDING ,	N	N	Y	N	N	N	N	N	N	Y	N	N	N	N
123	RS	Y	N	N	10	1	1	0	0	0	2	0	1	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N
124	Y	Y	N	N	10	2	0	1	0	0	1	1	0	0	0	2	0	1	0	0	-	N	N	N	N	N	N	N	N	N	N	N	N	N	N

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Date 20/4/2021

The Principal,
DMC,Ludhiana.

Subject: **Approval of Plan of Thesis.**

This is to inform you that the Faculty of Medical Sciences in its meeting held on 22.01.2021 has approved the plan of thesis of **Dr. Nikhar Somani**, a student of your college for **MD Paediatrics** along with the names of Supervisor/Co-Supervisor as under:-

Topic Plan of Thesis

To study the factors affecting enteral nutrition in children admitted to pediatric icu

Supervisor
Dr. Puneet A. Pooni
Prof. & Head,
Dept. of Paediatrics,
DMCH, Ludhiana.

Co-Supervisor
Dr. Siddharth Bhargava
Assoc. Prof.,
Dept. of Paediatrics,
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The student has to submit the three copies of thesis (along with PDF format) , to the Controller of Examinations, BFUHS, Faridkot, at least six months before the commencement of theory examination, if he/she is otherwise eligible to take the examination. He /She must directed to attach a photocopy of this letter with the forwarding letter while submitting thesis to the University along with the letter of approval of University for change of supervisor/Co-Supervisor, change of topic,(if any).

Dr. S P Singh MS(Oph)
Controller of Examinations

Note :

1. ***If any discrepancy found regarding topic of thesis or Supervisor/Co-Supervisor, inform undersigned within one month after issue of this letter.***
2. *The student may submit the thesis as per the schedule already conveyed i.e for May/June examination 30th Nov of the preceding the year of examination and for Nov/Dec examinations 31st May of the year of examination.*

TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU

THESIS PROPOSAL

FOR APPROVAL OF SUBJECT OF THESIS TO BE SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF

MD

In

PAEDIATRICS

OF THE

BABA FARID UNIVERSITY OF HEALTH SCIENCES

FARIDKOT

November, 2019

DR. NIKHAR SOMANI

DEPARTMENT OF PAEDIATRICS
DAYANAND MEDICAL COLLEGE AND HOSPITAL
LUDHIANA

ABSTRACT OF PLAN OF THESIS

TITLE	TO STUDY THE ENTERAL NUTRITION PRACTICES IN CHILDREN ADMITTED TO PEDIATRIC ICU
DEGREE	MD Paediatrics
NAME OF THE CANDIDATE	Dr. Nikhar Somani
SUPERVISOR	Dr. Puneet A. Pooni, Professor & Head, Department of Pediatrics, DMC&H, Ludhiana
CO – SUPERVISOR	Dr. Siddharth Bhargava, Associate Professor Department of Pediatrics, DMC&H, Ludhiana
INSTITUTION	Dayanand Medical College and Hospital, Ludhiana
UNIVERSITY	Baba Farid University of Health Sciences, Faridkot

INTRODUCTION: Nutrition is required for the normal growth and development. Critical ill children have high risk of malnutrition due to stress induced increased BMR and protein catabolism. The delay in initiating and proceeding enteral nutrition can result in non fulfillment of target energy and protein delivery goals. advantages of enteral nutrition include maintaining the integrity of mucosa of intestine, preventing translocation of bacteria , further decreasing infection rate, improving the status of immunity , thus decreasing morbidity and mortality nutritional assessment includes optimum nutritional requirement, hemodynamic status, in the children.

AIM OF STUDY: 1) To study the current practice of using Enteral Nutrition in critical care 2) To study the factors affecting enteral nutrition effect of EN on outcome of children in relation to morbidity and mortality.

MATERIALS & METHODS: It will be a time bound prospective observational study over period of one year of all children in a age group of 1-18 years admitted to PICU, department of Pediatrics of DMC&H, Ludhiana. Eligibility criteria : 1) Admission for more than 48 hours 2) Guardian of the patient giving informed consent for enrolment in the study Exclusion criteria: 1)age less than 1 year 2)duration of stay less than 48 hours. All children admitted to PICU meeting the inclusion criteria will be enrolled and details filled in the prestructured proforma. Exact time of starting the enteral nutrition will be noted. Expected calories and protein intake will be calculated at admission and the time of achieving goal will be noted. All factors, which may affect the enteral nutrition like shock, ventilation, surgery and outcome of the patient including morbidity like infections, PICU stay etc and mortality will be noted.

CLINICAL SIGNIFICANCE: Enteral Nutrition is the preferred route of delivery in critically ill children associated with improvement in gut blood flow and mass, immunity status, protein synthesis, wound healing and overall survival post illness. But there is a scarcity on similar research in developing countries and there is pressing need to study this aspect in our set up.

KEYWORDS - Enteral nutrition; critically ill; early nutrition.

(Signature)	(Signature)	(Signature)	(Signature)
Candidate	Co-supervisor	Supervisor	Principal

CERTIFICATE OF FACILITIES AVAILABLE

This is to certify that the facilities for work on the subject of thesis titled **"TO STUDY THE ENTERAL NUTRITION PRACTICES IN CHILDREN ADMITTED TO PEDIATRIC ICU"** exist in the Department of Paediatrics, DMC&H, Ludhiana and will be provided to the candidate. We will see that the data being included in the thesis is genuine and is collected by the candidate herself under our supervision and guidance.

Supervisor

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Professor & Head
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Co-Supervisor

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Head of the Department

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Place : _____

Date : _____

APPROVAL PROFORMA
BY
RESEARCH & ETHICAL COMMITTEE
DAYANAND MEDICAL COLLEGE & HOSPITAL, LUDHIANA

Name of candidate	Dr. Nikhar Somani
Department	Paediatric
Topic of Thesis	TO STUDY THE ENTERAL NUTRITION PRACTICES IN CHILDREN ADMITTED TO PEDIATRIC ICU
Likely date of appearing in PG examination	May 2022
Date of enrollment	18th May , 2019
Name of Head of Department	Dr. Puneet A Pooni
1) Supervisor	Dr. Puneet A Pooni
2) Co-Supervisor(s)	Dr. Siddharth Bhargava
Signature of Members of Research Committee with Stamp	**Signature of Members of Ethics Committee with Stamp**
Dr. Jaspal Singh (Professor & Head, Surgery)	Mr. A K Jindal (Member, Ethics Committee)
Dr. Dinesh Gupta (Professor & Head, Medicine)	Dr. Anu Sharma (Professor, Anatomy)
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Dr. Rajoo Singh Chhina (Dean Academics)	Dr. Neena Sood (Professor & Head, Pathology)
Dr. Gurpreet S Wander (Vice Principal)	Dr. Gurpreet S Wander (Vice Principal)
	Dr. Gagandeep Singh (Secretary, Ethics Committee Professor & Head, Neurology)

Approved: Yes / ~~No~~

Dr. Sandeep Puri
Chairperson
Research Committee

Approved: Yes / ~~No~~

Prof. Arvind Malhotra
Chairperson
Ethics Committee

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PROFORMA FOR REGISTRATION OF SUBJECT FOR DISSERTATION

1	NAME OF THE CANDIDATE AND ADDRESS	Dr. Nikhar Somani House No. 1007 ,Street No.2 , Circular Road , Abohar , Punjab
2	NAME OF THE INSTITUTE	Dayanand Medical College and Hospital, Ludhiana
3	COURSE OF STUDY AND SUBJECT	MD Pediatrics
4	DATE OF ADMISSION OF COURSE	18th May , 2019
5	TITLE OF THE TOPIC	TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU

6. BRIEF RESUME OF THE INTENDED WORK

6.1 NEED FOR THE STUDY

Nutrition is required for the normal growth and development. Adverse effects on congnitition during later stages of life can develop due to nutritional deficiency. Due to limited macronuttrient store and relatively higher energy requirements than adults admitted to ICU, optimal nutrition support is of paramount importance for critically ill children. Such children have high risk of malnutrition due to stress induced increased BMR and protein catabolism. Optimal nutrition delivery in pediatric ICU is main core of critical care, since it combats the metabolic changes which accompany acute illness and injury, prevent immune system dysfunction, promote tissue repair, prevent lean muscle mass loss and minimize weight loss.

The preferred mode of intake of nutrition in critically ill children with functioning bowel is enteral nutrition. The delay in initiating and proceeding enteral nutrition can result in non fulfillment of target energy and protein delivery goals. Advantages of enteral nutrition include maintaining the integrity of mucosa of intestine, preventing translocation of bacteria, further decreasing infection rate, improving the status of immunity, thus decreasing morbidity and mortality nutritional assessment includes optimum nutritional requirement, hemodynamic status, in children.

Though the advantages of enteral nutrition in ill children are known and it is also known that delay in enteral nutrition leads to more complications like more infection rate, delay in recovery, thus prolonged hospital stay but there is no study done from the region to know the factors affecting enteral nutrition in children pediatric ICU. Although studies are available on practices of entral nutrition in pediatric ICUs of developed countries but there is paucity of literature in developing countries .Since children in developing countries have underlined malnutrition, further delay in nutrition may lead to more complications. Hence, there is need to study factors affecting enteral nutrition in children admitted to pediatric ICU.

The Advantages of enteral nutrition are known, but in critically ill children admitted in pediatric ICU, there may be many factors leading to delay in initiation of enteral nutrition. These factors could be presence of shock, high inotropes, altered sensorium, on non invasive ventilation, vomiting, intolerance to feeds etc. Though there are many factors, but there is no prospective study available from region, where these factors are studied and also to determine affect of these factors on ultimate outcome of these critical ill patients.

When compared with acute physiological needs of critical ill child, nutritional support is often considered secondary; however need of study is to recognize it as key therapeutic modality.

6.2 REVIEW OF LITERATURE

Hamilton et al evaluated the impact of implementing an enteral nutrition (EN) guidelines on achieving optimal EN delivery in the Pediatric Intensive Care Unit (PICU) by designing a Prospective pre/post implementation audit of EN practices upon a setting of One 29-bed medical/surgical PICU in a free standing, university affiliated children's hospital, sample size composed of consecutive patients admitted to the PICU over two 4-week periods pre and post implementation, with a stay of > 24 hours who received EN. This showed significant improvement in EN delivery and decreased dependence on PN in critically ill children. Target energy intake goal was reached earlier in a higher proportion of patients.[1-3]

Mehta et al evaluated the impact of protein intake on outcomes in pediatric critical illness by examining the association between protein intake and 60-d mortality in mechanically ventilated children by designing a prospective, multicenter, cohort study that included 59 pediatric intensive care units (PICUs) from 15 countries and enrolled consecutive children (age: 1 mo to 18 y) who were mechanically ventilated for 48 h. They enrolled 1245 subjects (44% female) with a median age of 1.7 y (IQR: 0.4, 7.0 y). A total of 985 subjects received enteral nutrition, 354 (36%) of whom received enteral nutrition via the postpyloric route. Early initiation, postpyloric route, shorter interruptions, larger PICU size, and a dedicated dietitian in the PICU were associated with higher enteral protein delivery. They concluded that Delivery of .60% of the prescribed protein intake is associated with lower odds of mortality in mechanically ventilated children. Optimal prescription and modifiable practices at the bedside might enhance enteral protein delivery in the PICU with a potential for improved outcomes.[4-5]

Jacob et al studied delay of EN in critically ill children admitted to pediatric intensive care units (PICUs), due to gastrointestinal dysfunction or interrupted guidelines for PN administration to critically ill children And summarized the most recent literature that provides evidence on the implications for clinical practice with regard to the use of early supplemental PN in critically ill. They concluded that the lack of other RCTs in this specific field makes it challenging to compare these findings with other available recent studies.

Further research, in the form of multicenter RCTs, is warranted to determine the optimal composition and ideal timing of initiation of supplemental PN in critically ill children.[6-8]

Brown et al evaluated Malnutrition in the critically ill or injured child is associated with increased morbidities and mortality in the pediatric intensive care unit (PICU), whether present upon admission or acquired during the PICU stay. Enteral nutrition (EN), the preferred route of nutrient delivery, may be a crucial component of care provided in the PICU which modifies the response to critical illness or injury, resulting in improved outcomes. Numerous challenges exist in the delivery of the EN goal in critically ill children. They described the current state of the science and challenges related to EN prescription and delivery in the critically ill child. Suggestions for improving EN practice were presented, in addition to a platform for further research inquiry.[9-11]

Mara et al performed a cohort study in the year 2009 and 2010 in a 22 bed multi specialty PICU at the Royal Hospital for Sick Children, Glasgow, United to evaluate enteral nutrition practices and nutritional provision in children during their entire stay in PICU. It was found that beginning of entral nutrition was significantly delayed in patients among General Surgery and Congenital Heart Defects group as Compared to those in medical group. Lesser amount of fluids and lesser NSDs found in those from the CHD Surgical group compared with those with medical conditions. Protein and energy requirements were achieved in 38% and 33% of the NSDs. In a substantial proportion of NSDs, minimum micronutrient recommendations were not met particularly in those patients from the CHD Surgical group. A higher delivery of fluid requirements (p < 0.05) and a greater proportion of these delivered as EN (p < 0.001) were associated with median energy intake during stay and delay of EN advancement. The factors contributing to non fulfillment of target energy requirements were found to be Fasting for either procedures, interventions in PICU and other clinical reasons, fluid restriction (39%) for clinical reasons, procedures requiring feed cessation and establishing EN (22%) were the most common reasons why target energy requirements were not met.[12-14]

Zamberlan et al evaluated NT administered to 90 consecutive patients who were hospitalized for 7 days in the PICU of Instituto da Criança, Hospital das Clínicas, Universidade de São Paulo, Brazil. NT was established according to the protocol provided by the institution's NT team and concluded that malnutrition is prevalent in critically ill children. Nutrition intervention in children, guided by a multidisciplinary team and nutrition support protocols and monitored by anthropometric assessment, may help reduce nutrition deficits during hospitalization in the PICU. It is possible to introduce early gastric EN, and PN should be indicated when the digestive tract is not functioning or when EN alone is unable to meet the nutrition demands of the patient.[15-17]

Canarie et al studied nutritional practices in 6 medical-surgical PICUs in a retrospective cross-sectional study using medical records as source of data Patients—Children < 21 years old admitted to the PICU for ≥ 72 hours excluding those awaiting or recovering from abdominal surgery and concluded that Institutions in this study initiated EN for a high percentage of patients by 48 hours of admission. Non-invasive positive pressure ventilation was most strongly associated with delay EN. A better understanding of these risk factors and assessments of nutritional requirements should be explored in future prospective studies.[18-20]

Mara et al evaluated enteral nutrition practices and nutritional provision in children during the entire length of stay in patients from both the General Surgical and congenital heart defect (CHD) Surgical groups [Median (IQR); CHD Surgical group: 20.3 (16.4) vs General Surgical group: 11.4 (53.5 vs Medical group: 6.5 (10.9 hours; $p \leq 0.001$]. The proportion of fluids delivered as EN per patient (45% vs 73%) or per NSD (56% vs 73%) in those from the CHD Surgical group compared with those with medical conditions were found to be on lower side. In a substantial proportion of NSDs, minimum micronutrient recommendations were not met particularly in those patients from the CHD Surgical group. A higher delivery of fluid requirements ($p < 0.05$) and a greater proportion of these delivered as EN ($p < 0.001$) were associated with median energy intake during stay and delay of EN advancement. The most common reasons why target energy were not met were found to be Fasting, fluid restriction for clinical reasons, procedures

requiring feed cessation and establishing EN requirements and they concluded that delivery of EN should be prioritized over other "non-nutritional" fluids whenever this is possible.

6.3 AIMS AND OBJECTIVES OF THE STUDY

1. To evaluate the current practice of enteral nutrition in critical ill children.
2. To study the factors affecting enteral nutrition.
3. To study affect of Enteral Nutrition on outcome of children in relation to morbidity and mortality.

7. MATERIALS AND METHODS

7.1 Source of Data

Source of data will be all children aged 1 year to 18 years who have been admitted in Pediatric ICU in department of Pediatrics, DMCH, Ludhiana for period of 1 year from January 2020 to December 2020.

7.2 METHOD OF COLLECTION OF DATA

It will be a time bound prospective observational study of critical ill children to evaluate their enteral nutrition practices in pediatric ICU of department of Pediatrics of DMC&H, Ludhiana.

INCLUSION CRITERIA

1) Admission for more than 48 hours

2) Guardian of the patient giving informed consent for enrolment in the study

EXCLUSION CRITERIA

1) Age less than 1 year

2) Duration of stay less than 48 hours

OUTCOME

The outcome of our study will be to evaluate for the time it takes for fulfillment of target nutritional requirements in critical ill children aged 1 to < 18 years admitted in pediatric ICU. Nd also the factors affecting the enteral nutrition.

Statistical Analysis

Data will be described in terms of range; mean±standard deviation, frequencies (number of cases) and relative frequencies (percentages as appropriate. All statistical calculations will be done using SPSS 21 version statistical program for Microsoft Windows.

7.3 DOES THE STUDY REQUIRE ANY INVESTIGATIONS OR INTERVENTIONS TO BE CONDUCTED ON PATIENTS OR OTHER HUMANS OR ANIMALS? IF SO, PLEASE DESCRIBE BRIEFLY.

No

7.4 HAS ETHICAL CLEARANCE BEEN OBTAINED FROM YOUR INSTITUTION IN CASE OF 7.3?

Attached herewith

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INFORMED PATIENT CONSENT

Date: _____

I.....D/o, W/o, S/o.....

am willing to participate in the study **"TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU"** The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason.

.....
Signature of the Witness

Name:

.....
Signature of the patient

Signature of Candidate

Signature of Supervisor

मरीज अनुमति फार्म

तिथि _____

मैं _____ पत्नी/पुत्र/पुत्री _____

निवासी _____

इस शोधकार्य **"TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU"** में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ की यह स्वीकृति देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है की यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामुली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ _____

गवाह के हस्ताक्षर रोगी के हस्ताक्षर/अंगूठे का निशान

नाम: नाम:

_____

अन्वेषक के हस्ताक्षर

_____

विद्यार्थी के हस्ताक्षर

ਮਰੀਜ਼ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ_____

ਮੈ_____ਪਤਨੀ/ਪੁੱਤਰ/ਪੁੱਤਰੀ_____

ਵਾਸੀ _____

"TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU" ਤੇ ਚਲ ਰਹੀ ਖੋਜ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ ਹਾਂ/ ਚਾਹੁੰਦੀ ਹਾਂ ਕੇ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂ ਕਿਸੇ ਵੀ ਤਰਾਂ ਦਾ ਲੋਭ-ਲਾਲਚ ਨਹੀ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਕੇ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਵਿਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂ ਇਹ ਯਕੀਨ ਹੈ ਕੇ ਇਹ ਖਤਰਾ ਬਹੁਤ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ – ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈ ਇਸ ਖੋਜ ਕੰਮ ਵਿਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇ ਵਾਪਸ ਲੈ ਸਕਦਾ ਹਾਂ/ ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ_____ ਮਿਤੀ_____

ਪਤਾ _____ ਪਤਾ _____

_____

ਨਿਰੀਖਕ ਦੇ ਹਸਤਾਖਰ

_____

ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ

PATIENT'S PARENT/GUARDIAN CONSENT FORM

Date: ____/____/____

I .....F/o, M/o ..... R/o ..... am willing to let my child participate in the study entitled Bed **"TO STUDY THE FACTORS AFFECTING ENTERAL NUTRITION IN CHILDREN ADMITTED TO PEDIATRIC ICU"**. The procedure with its complications has been explained to me in local vernacular language. I have fully understood that no special tests and extra expenditure in any form, merely for the purpose of thesis is being carried out. I am free to opt out the study any time without assigning any reason. This will not affect my treatment and investigation of my child.

_____	_____
Signature of the Witness	Signature/Thumb Impression of guardian
Name:	Name:
_____	_____
Signature of the Supervisor	Signature of Candidate

ਮਰੀਜ ਦੇ ਮਾਤਾ/ਪਿਤਾ ਦਾ ਰਜ਼ਾਮੰਦੀ ਫਾਰਮ

ਮਿਤੀ __/___/____

ਮੈਂ _____ ਪਿਤਾ/ਮਾਤਾ _____,

ਵਾਸੀ _____

ਆਪਣੇ ਬੱਚੇ ਦੇ ਇਸ ਅਧਿਐਨ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਤੇ ਰਜ਼ਾਮੰਦ ਹਾਂ। ਇਸ ਖੋਜ ਕੰਮ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਲਈ ਮੈਂ ਆਪਣੀ ਮਰਜ਼ੀ ਨਾਲ ਤਿਆਰ ਹਾਂ। ਮੈਂ ਇਹ ਦਸਣਾ ਚਾਹੁੰਦਾ/ਚਾਹੁੰਦੀ ਹਾਂ ਕਿ ਇਹ ਰਜ਼ਾਮੰਦੀ ਦੇਣ ਵਾਸਤੇ ਮੈਨੂੰ ਕਿਸੇ ਵੀ ਤਰ੍ਹਾਂ ਦਾ ਲੱਭ-ਲਾਲਚ ਨਹੀਂ ਦਿੱਤਾ ਗਿਆ ਅਤੇ ਨਾ ਹੀ ਕੋਈ ਦਬਾ ਪਾਇਆ ਗਿਆ ਹੈ। ਮੈਨੂੰ ਇਸ ਖੋਜ ਦਾ ਮਨੋਰਥ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ ਅਤੇ ਮੈਨੂੰ ਇਹ ਭਰੋਸਾ ਦਵਾਇਆ ਗਿਆ ਹੈ ਇਹ ਖੋਜ ਵਿਗਿਆਨ ਅਤੇ ਮਾਨਵਤਾ ਦੀ ਭਲਾਈ ਲਈ ਹੈ। ਮੈਨੂੰ ਇਸ ਖੋਜ ਵਿੱਚ ਹੋਣ ਵਾਲੇ ਖਤਰੇ ਬਾਰੇ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆਂ ਹੈ ਅਤੇ ਮੈਨੂੰ ਇਹ ਯਕੀਨ ਹੈ ਕਿ ਇਹ ਖਤਰਾ ਬਹੁਤਾ ਮਾਮੂਲੀ ਹੈ। ਮੈਨੂੰ ਇਸ ਖੋਜ ਕੰਮ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਦਾ ਢੰਗ-ਤਰੀਕਾ ਸਮਝਾ ਦਿੱਤਾ ਗਿਆ ਹੈ।

ਮੈਂ ਇਸ ਖੋਜ ਕੰਮ ਵਿੱਚ ਹਿੱਸਾ ਲੈਣ ਬਾਰੇ ਆਪਣੀ ਰਜ਼ਾਮੰਦੀ ਕਿਸੇ ਵੀ ਸਮੇਂ ਵਾਪਸ ਲੈ ਸਕਦਾ/ਸਕਦੀ ਹਾਂ ਅਤੇ ਮੇਰੀ ਰਜ਼ਾਮੰਦੀ ਵਾਪਸ ਲੈਣ ਦਾ ਮੇਰੇ ਬੱਚੇ ਦੇ ਇਲਾਜ ਤੇ ਕੋਈ ਅਸਰ ਨਹੀਂ ਹੋਵੇਗਾ।

_____ _____

ਗਵਾਹ ਦੇ ਹਸਤਾਖਰ ਮਰੀਜ਼ ਦੇ ਹਸਤਾਖਰ

ਮਿਤੀ _____ ਮਿਤੀ _____

ਪਤਾ _____ ਪਤਾ _____

_____ _____

ਨਰੀਖਕ ਦੇ ਹਸਤਾਖਰ ਸਿਖਿਆਰਥੀ ਦੇ ਹਸਤਾਖਰ

मरीज के माता/पिता का अनुमति फार्म

तिथि ___/___/___

मैं _____ पिता/माता/_____ वासी _____, अपने बच्चे के इस शोधकार्य में भाग लेने के लिए सहमत हूँ। मैं इस शोधकार्य में भाग लेने के लिए अपनी स्वेच्छा से तैयार हूँ। मैं पुष्टि करता/करती हूँ कि स्वीकृत देने के लिए मुझे कोई आर्थिक प्रलोभन नहीं दिया गया और न ही दबाव डाला गया है। मुझे इस शोधकार्य का उद्देश्य स्पष्ट कर दिया गया है और मुझे यह विश्वास है कि यह विज्ञान और मानवता के लाभ के लिए है। मुझे इस शोधकार्य में होने वाले जोखिम के बारे में समझा दिया गया है और मेरी समझ में यह जोखिम बहुत मामूली है।

मैं इस शोधकार्य में भाग लेने के सम्बन्ध में किसी भी समय अपनी अस्वीकृति व्यक्त कर सकता/सकती हूँ और मेरे अस्वीकृति व्यक्त करने का मेरे बच्चे के इलाज पर कोई प्रभाव नहीं पड़ेगा।

_____ गवाह के हस्ताक्षर

_____ मरीज के माता/पिता के हस्ताक्षर

तिथि _____

पता _____

_____

_____

_____ नरीक्षक के हस्ताक्षर

_____ प्रत्याक्षी के हस्ताक्षर

PROFORMA

S.NO- MRD no:

NAME: AGE: SEX:

DATE OF ADMISSION: DATE OF DISCHARGE :

DURATION OF STAY :

ADDRESS :

CHIEF COMPLAINTS:

ANTHROPOMETRY :

	ACTUAL	EXPECTED	REMARKS
WEIGHT			
HEIGHT			
BMI			

MALNUTRITION : YES / NO

PRIMARY ASSESSMENT:

AIRWAY : open & stable open & unstable obstructed

Signature of candidate : **Signature of consultant:**

BREATHING:

RR:

Efforts : Normal / Poor / Increased / Acidotic

A/E : Normal / Poor / Differential

Auscultation : None / Stridor / Wheeze / Crackles

sPO_2 :

CIRCULATION : HR : Rhythm: CFT: BP:

CP : good / poor PP : good / poor Skin temp : warm / cool

DISABILITY : GCS : E M V Pupil size: Reaction:

EXPOSURE : Temp :

GPE: Pallor_____ / Icterus_____ / Cyanosis_____ / Clubbing _____/
Lymphadenopathy_____ / Edema_____

SYSTEMIC EXAM:
Chest:

CVS:

CNS:

P/A:

PRIMARY SYSTEM INVOLVED (FOCUS) RESPIRATORY / CVS / CNS / GIT / RENAL

FINAL DIAGNOSIS :

Signature of candidate : **Signature of consultant:**

OXYGEN: YES / NO

- NRM / FACE MASK / NASAL PRONGS

VENTILATION: YES / NO

- INVASIVE / NON INVASIVE

REASON FOR INTUBATION: PULMONARY / EXTRAPULMONARY

- DURATION OF INTUBATION:

NIV:

- DURATION OF NIV :

INOTROPES: YES / NO

- TYPE: DOPAMINE / DOBUTAMINE/ EPINEPHRINE/NOREPINEPHRINE
- STRENGTH OF INOTROPES : _____

CENTRAL LINE:

FLUID BOLUS REQUIREMENTS: yes/no. one/two/three/more each bolus 5/10/20 ml/kg

Nature of fluid: NS/RL/Colloid/blood/other

Total fluid balance in ml/kg: 1st 24 hours 2nd day

Signature of candidate :

Signature of consultant:

INVESTIGATIONS:

pH	PO_2	PCO_2
FiO_2	HCO_3	BE

Hb	Na	Lactate
TLC	K	CRP
DLC	BU	RBS
Platelets	Creatinine	Vitamin D
	OT/PT	

Special Investigations : including cultures

Imaging:

DRUGS	ROUTE	DOSE	FREQUENCY	START DATE	STOP DATE

Signature of candidate :

Signature of consultant:

PRISM SCORE:

Day of starting feeds = _____ day of PICU admission

Weight	Ideal body weight	Expected calories	Expected protiens	Target volume

Mode of feeding : NG/OG/NJ/Others

Parentcal nutrition : Yes/No

Day of Feeds	Yes or No	Total volume(ml)	Calories(Kcal)	Proteins(gm)	Reason of stopping feeds

OUTCOME:DISCHARGED/DIED/DAMA

Signature of candidate

Signature of consultant